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FIG. 1

AlaSerCysLeuAsnCysSerAlaSerIleIleProAspArgGluValLeuTyrArgGlu
1 GGCCTCCTGCTTGAAGTGTCTCGGCGAGCATCATACCTGACAGGGAAGTCCTCTACCGAGA
CCGGAGGACGAACCTTGACGAGCCGCTCGTAGTATGGACTGTCCCTTCAGGAGATGGCTCT

PheAspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeu
61 GTTCGATGAGATGGAAGAGTGTCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCT
CAAGCTACTCTACCTTCTCACGAGAGTCGTGAATGGCATGTAGCTCGTTCCTACTACGA

AlaGluGlnPheLysGlnLysAlaLeuGlyLeu
121 CGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTCC
GCGGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAGG

FIG. 3

GlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIleProAsp
1 CTGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGTCCGGGAAGCCGGCAATCATACCTG
GACCGACGCACCAGTATCACCCGTCCCAGCAGAACAGGCCCTTCGGCCGTTAGTATGGAC

T

ArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeuProTyr
61 ACAGGGAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGTCTCTCAGCACTTACCGT
TGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCACGAGAGTCGTGAATGGCA

A

IleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeuGln
121 ACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGGCCTCCTGC
TG TAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAGGACG

ThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLysLeu
181 AGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAGACCAACTGGCAAAAAC
TCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTTTTTG

GluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAlaGly
241 TCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATACTTGGCGG
AGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCCTATGTTATGAACCGCC

LeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAlaVal
301 GCTTGTC AACGCTGCCTGGTAACCECGCCATTGCTTCATTGATGGCTTTTACAGCTGCTG
CGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAAC TACCGAAAATGTCGACGAC

ThrSerProLeuThrThrSerGln
361 TCACCAGCCCACTAACCCTAGCCAAA
AGTGGTCGGGTGATTGGTGATCGGTTT



FIG. 2

5-1-1	1	l ggcctcctgcttgaactgctcggcgagc jATCATACCTGACAGGGAAG
81	1	GTCCGGGAAGCCGGCAATCATACCTGACAGGGAAG
91	1	ctg9ctgcgtGGTCATAGTGGGCAGGGTCGCTTGTGTCGGGAAGCCGGCAATCATACCTGACAGGGAAG
1-2	1	GGTCATAGTGGGCAGGGTCGCTTGTGTCGGGAAGCCGGCAATCATACCTGACAGGGAAG
5-1-1	48	TCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGC
81	36	TCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGC
91	70	TCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGC
1-2	60	TCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGC
5-1-1	120	TCGCCGAGCAGTTCAAGCAGAAAGGCCCTCGGCCCTCC
81	108	TCGCCGAGCAGTTCAAGCAGAAAGGCCCTCGGCCCTCCCTGCAGACCGCGTCCCCTCAGGCAGAGGTTATCGCCC
91	142	TCGCCGAGCAGTTCAAGCAGAAAGGCCCTCGGCCCTCCCTGCAGACCGCGTCCCCTCAGGCAGAGGTTATCGCCC
1-2	132	TCGCCGAGCAGTTCAAGCAGAAAGGCCCTCGGCC
81	180	CTGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTG6GCGAAGCATATGTGGAACCTTCATCAGTGGGA
91	214	CTGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTG6GCGAAGCATATGTGGAACCTTCATCAGTGGGA
81	252	TACAATACTTGGCGGGCTTGTCAACGCTG6CTGGtaaccccgccattgcttcattgatg9ccttttacagctg
91	286	TACAATACTTGGCGGGCTTGTCAACGCTG6CTGG
81	324	ctgtcaccagccactaaccactagccaaa



FIG. 4

SerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMet
1 GTCCGGGAAGCCGGAATCATACCTGACAGGAAGTCCTCTACCGAGAGTTCGATGAGAT
CAGGCCCTTCGGCCGTTAGTATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTA

GluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPhe
61 GGAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGATGATGCTCGCCGAGCAGTT
CCTTCTCAGAGAGTCGTGAATGGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAA

LysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaPro
121 CAAGCAGAAGCCCTCGGCCTCCTGCAGACCGCGTCCCGTCAGGCAGAGTTATCGCCCC
GTTCTGCTTCCGGGAGCCGGAGGACGTCTGGCGCAGGCAGTCCGCTCTCCAATAGCGGGG

AlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPhe
181 TGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTGGCGGAAGCATATGTGGAACCTT
ACGACAGGTCTGGTTGACCCGTTTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAA

IleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAla
241 CATCAGTGGGATACAATACTTGGCGGGCTTGTCACAGCTGCCCTGGTAACCCCGCCATTGC
GTAGTCACCCCTATGTTATGAACCGCCCGAACAGTTCGACGGACCATTTGGGGCGGTAAACG

SerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
301 TTCATTGATGGCTTTTACAGCTGCTGTCAACAGCCCACTAACCACCTAGCCAAA
AAGTAACTACCGAAATGTCCGACGACAGTGGTCTGGGTGATTGGTGATCGGTTT

FIG. 5

AspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAla
1 GATGCCCACTTCTATCCAGACAAAGCAGAGTGGGAGAACCTTCCTTACCTGGTAGCG
CTACGGGTGAAAGATAGGGTCTGTTTCGTCTCACCCCTCTTGAAGGAATGGACCATCGC
TyrGlnAlaThrValCysAlaArgAlaGlnAlaProProSerTrpAspGlnMetTrp
61 TACCAAGCCACCGTGTGCGTAGGGCTCAAGCCCTCCCCCATCGTGGGACCAGATGTGG
ATGGTTCGGTGGCACACGCGATCCCGAGTTCGGGAGGGGTAGCACCCCTGGTCTACACC
LysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeu
121 AAGTGTTCGATTGCTCAAGCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTG
TTCACAAACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGACGATATGTCTGAC
GlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCys
181 GCGCTGTTCAGAAATGAATCACCCCTGACGCACCCAGTCACCAATAATCATCATGATGC
CCGCGACAAGTCTTACTTTAGTGGGACTGCGTGGGTGAGTGTATGTAGTACTGTACG
MetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAla
241 ATGTCGGCCGACCTGGAGTCTGTACGAGCACCTGGTGTCTGCGGCGCTCCTGGCT
TACAGCCGGCTGGACCTCCAGCAGTCTCGTGGACCCACGAGCAACCCGCCGAGGCCGA
AlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeu
301 GCTTTGGCCGCGTATTGCTGTCAACAGGCTGCGTGGTTCATAGTGGGAGGGTCTCTTG
CGAAACCGGCGCATAAACGGACAGTTGTCCGACGACCATCATCCCGTCCCAGCAGAAC
-----Overlap with 81-----
SerGlyLysProAlaIleIleProAspArgGluValLeuTyrArg
361 TCCGGGAAGCCGCAATCATACCTGACAGGGAAGTCTCTACCGAG
AGGCCCTTCGGCCGTTAGTAGTGGACTGTCCCTTCAGGAGATGGCTC



FIG. 6

1 AspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAla
GATGCCCACTTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGGTAGCG
CTACGGGTGAAAGATAGGGTCTGTTTCGTCTCACCCCTCTTGGAAGGAATGGACCATCGC

61 TyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrp
TACCAAGCCACCGTGTGCGCTAGGGCTCAAGCCCCCTCCCCATCGTGGGACCAGATGTGG
ATGGTTTCGGTGGCACACGCGATCCCGAGTTCGGGGAGGGGGTAGCACCCCTGGTCTACACC

121 LysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeu
AAGTGTGTTGATTTCGCCTCAAGCCCACCTCCATGGGCCAACACCCCTGCTATACAGACTG
TTCACAACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGAC

181 GlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCys
GGCGCTGTTCAGAAATGAAATCACCCCTGACGCACCCAGTCACCAAATACATCATGACATGC
CCGCGACAAGTCTTACTTTAGTGGGACTGCGTGGGTCAGTGGTTTATGTAGTACTGTACG

241 MetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAla
ATGTGCGGCCGACCTGGAGGTGCTCACGAGCACCTGGGTGCTCGTTGGCGGCGTCTGGCT
TACAGCCGGCTGGACCTCCAGCAGTGCTCGTGGACCCACGAGCAACCGCCGACGACCGA

301 AlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeu
GCTTTGGCCGCGTATTGCCTGTCAACAGGCTGCGTGGTTCATAGTGGGCAGGGTCTGCTTG
CGAAACCGGCGCATAACGGACAGTTGTCCGACGCACCAAGTATCACCCGTCCAGCAGAAC

361 SerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMet
TCCCGGAAGCCGGCAATCATACCTGACAGGGAAGTCTCTACCGAGAGTTCGATGAGATG
AGGCCCTTCGGCCGTTAGTATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTAC

421 GluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPhe
GAAGAGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTC
CTTCTCACGAGAGTCGTGAATGGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAG

481 LysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaPro
AAGCAGAAGGCCCTCGGCCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCCT
TTCGTCTTCCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGA

541 AlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPhe
GCTGTCCAGACCAACTGGCAAAAACCTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTC
CGACAGGTCTGGTTGACCGTTTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAG

601 IleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAla
ATCAGTGGGATACAATACTTGGCGGGCTTGTCACGCTGCCTGGTAACCCCGCCATTGCT
TAGTCACCCTATGTTATGAACCGCCCGAACAGTTGCGACGGACCATGGGGCGGTAACGA

661 SerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
TCATTGATGGCTTTTACAGCTGCTGTCAACAGCCCACTAACCCTAGCCAAA
AGTAACCTACCGAAAATGTCGACGACAGTGGTGGGGTGATTGGTGATCGGTTT



FIG. 7

-----Overlap with 81-----
PheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeu
1 CTTTTACAGCTGCTGTCACCAGCCCACTAACCCTAGCCAAACCCTCCTCTTCAACATAT .
GAAAATGTCGACGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATA

GlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAla
61 TGGGGGGGTGGGTGGCTGCCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTGGGCG
ACCCCCCACCACCGACGGGTCGAGCGGCGGGGGCCACGGCGATGACGGAACACCCGC

GlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeu
121 CTGGCTTAGCTGGCGCCGCCATCGGCAGTGTTGGACTGGGGAAGGTCCTCATAGACATCC
GACCGAATCGACCGCGGCGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTGTAGG

AlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGlu
181 TTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTG
AACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCAC

ValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeu
241 AGGTCCCCTCCACGGAGGACCTGGTCAATCTACTGCCCCGCCATCCTCTCGCCCCGAGCCC
TCCAGGGGAGGTGCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGG

ValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAla
301 TCGTAGTCGGCGTGGTCTGTGTCAGCAATACTGCGCCGGCACGTTGGCCCCGGGCGAGGGG
AGCATCAGCCGCACCAGACACGTCGTTATGACGCGGCCGTGCAACCGGGCCCGCTCCCC

ValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
361 CAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGAACCATGTTTCCCC
GTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGG



FIG. 8A

SerIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
1 TCCATTGAGACAAATCAGCTCCCCAGGATGCTGTCTCCGCACTCAACGTCGGGGCAGG
AGGTAAC TCTGTAGTGCAGGGGGTCCACGACAGAGGGCGTGAGTTGCAGCCCCCGTCC

ThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGly
61 ACTGGCAGGGGAAGCCAGGCATCTACAGATTGTGGCACCGGGGAGCGCCCTCCGGC
TGACCGTCCCCCTTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGGGGAGGCCG

MetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeu
121 ATGTTCCACTCGTCCGTCCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTC
TACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATCTCGAG

ThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProVal
181 ACGCCCGCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCCCGGGCTTCCCCGTG
TGCGGGCGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCAC

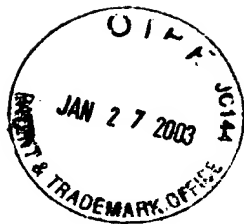


FIG. 8B

CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
241 TGCCAGGACCATCTTGAATTTGGGAGGGCGTCTTTACAGGCCCTCACTCATATAGATGCC
ACGGTCCCTGGTAGAACTTAAACCCCTCCCGCAGAAATGTCCGGAGTGATATATCTACGG

HisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGln
301 CACTTTCATCCAGACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGGTAGCGTACCAA
GTGAAAGATAGGGTCTGTTTCGTCTCACCCCTCTTGGAAGGAATGGACCATCGCATGGTT

-----Overlap with 36-----
AlaThrValCysAlaArgAlaGlnAlaProProSerTrpAspGlnMetTrpLysCys
361 GCCACCGTGTGGCTAGGGCTCAAGCCCTCCCCCATCGTGGACCCAGATGTGGAAGTGT
CGGTGGCACACGCGATCCCGAGTTCGGGGAGGGGTAGCACCCCTGGTCTACACCTTCACA

LeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAla
421 TTGATTCGCCCTCAAGCCCAACCTCCATGGGCCAACACCCCTGCTATACAGACTGGCGCT
AACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCCGGA



FIG. 9A

1 SerIleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArg
TCCATTGAGACAATCACGCTCCCCAGGATGCTGTCTCCCGCACTCAACGTCGGGGCAGG
AGGTAACCTCTGTTAGTGCGAGGGGGTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCC

61 ThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGly
ACTGGCAGGGGGAAGCCAGGCATCTACAGATTTGTGGCACCAGGGGAGCGCCCCCTCCGGC
TGACCGTCCCCCTTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCG

121 MetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeu
ATGTTGACTCGTCCGTCCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTC
TACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAG

181 ThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProVal
ACGCCCCGCCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTG
TGCGGGCGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCAC

241 CysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAla
TGCCAGGACCATCTTGAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCC
ACGGTCTGGTAGAACTTAAACCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGG

301 HisPheLeuSerSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGln
CACTTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACCAA
GTGAAAGATAGGGTCTGTTTCGTCTACCCCTCTTGGAAAGGAATGGACCATCGCATGGTT

361 AlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCys
GCCACCGTGTGCGCTAGGGCTCAAGCCCCTCCCCATCGTGGGACCAGATGTGGAAGTGT
CGGTGGCACACGCGATCCCGAGTTCGGGGAGGGGGTAGCACCCCTGGTCTACACCTTCACA

421 LeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTryArgLeuGlyAla
TTGATTGCTCTCAAGCCCACCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCT
AACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGA

481 ValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSer
GTTGAGAATGAAATCACCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTGCG
CAAGTCTTACTTTAGTGGGACTGCGTGGGTGAGTGGTTTATGTAGTACTGTACGTACAGC

541 AlaAspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeu
GCCGACCTGGAGGTCGTCACGAGCACCTGGGTGCTCGTTGGCGGCGTCTGGCTGCTTTG
CGGCTGGACCTCCAGCAGTGCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAAC

601 AlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGly
GCCGCGTATTGCCTGTCAACAGGCTGCGTGGTCAATAGTGGGCAGGGTCGTCTTGTCCGGG
CGGCGCATAACGGACAGTTGTCCGACGCACCAAGTATCACCCGTCCAGCAGAACAGGCC

661 LysProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGlu
AAGCCGGCAATCATACCTGACAGGGAAGTCTCTACCGAGAGTTCGATGAGATGGAAGAG
TTCGGCCGTTAGTATGGAAGTGTCCCTTCAAGAGATGGCTCTCAAGCTACTCTACCTTCTC

721 CysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGln
TGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAG
ACGAGAGTCGTGAATGGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTC

781 LysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaVal
AAGGCCCTCGGCCTCCTGACAGCCGCGTCCCGTCAGGCAGAGGTTATCGCCCCGTGCTGTC
TTCCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAG



FIG. 9B

841 GlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSer
CAGACCAACTGGCAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGT
GTCTG GTTGACCGTTTTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTGAAGTAGTCA

901 GlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeu
GGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTG
CCCTATGTTATGAACCGCCCGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAAC

961 MetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsn
ATGGCTTTTACAGCTGCTGTCACAGCCCACTAACCCTAGCCAAACCCTCCTCTTCAAC
TACCGAAAATGTCGACGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGACAAGTTG

1021 IleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheVal
ATATTGGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCCGGGTGGCGCTACTGCCTTTGTG
TATAACCCCCCACCACCGACGGGTGAGCGGGCGGGGGCCACGGCGATGACGGAAACAC

1081 GlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAsp
GGCGCTGGCTTAGCTGGCGCCGCCATCGGCAGTGTGGACTGGGGAAGGTCTCATAGAC
CCGCGACCGAATCGACCGCGGGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTG

1141 IleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSer
ATCCTTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGC
TAGGAACGTCCCATAACGCGCCCCGACCGCCCCGAGAACACCGTAAGTTCTAGTACTCG

1201 GlyGluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGly
GGTGAGGTCCCCTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGA
CCACTCCAGGGGAGGTGCCTCCTGGACCAAGTTAGATGACGGGCGGTAGGAGAGCGGGCCT

1261 AlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGlu
GCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAG
CGGGAGCATCAGCCGCACCAGACACGTGTTATGACGCGGCCGTGCAACCGGGCCCCGCTC

1321 GlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
GGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCC
CCCCGTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGG



FIG. 10

LeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAsp
1 CTCGCCGCAAGCTGGTCGCATTGGGCATCAATGCCGTGGCCTACTACCGCGTCTTGAC
GAGCGCGTTTCGACCAGCGTAACCCGTAGTTACGGCACCGGATGATGGCCGCAAGACTG

ValSerValIleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThr
61 GTGTCCGTCATCCCGACCGAGCGGCGATGTTGTCGTGCGTGGAACCGATGCCCTCATGACC
CACAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCACCGTTGGCTACGGGAGTACTGG

GlyTyrThrGlyAspPheAspSerValIleAspTyrAsnThrCysValThrGlnThrVal
121 GGCTATACCGCGACTTCGACTCGGTGATAGACTACAAATACGTGTGTACCCAGACAGTC
CCGATATGGCCGCTGAAGCTGAGCCACTATCTGATGTTATGCACACAGTGGGTCTGTCAG

-----Overlap with
AspPheSerLeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaVal
181 GATTTCAGCCTTGACCCCTACCTTCACCATTTGAGACAAATCACGCTCCCCAGGATGCTGTC
CTAAAGTCGGAACTGGGATGGAGTGGAAGTCTGTAGTCCGAGGGGTCCTACGACAG

clone 35-----
SerArgThrGlnArgArgGlyArgThr
241 TCCCGCACTCAACGTCGGGCGAGGACTG
AGGCGGTGAGTTGCAGCCCCCGTCTCTGAC



FIG. 11

-----Overlap with 32-----
1 MetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrVal
GATGAACCGGCTGATAGCCTTCGCCTCCCGGGGAACCATGTTTCCCCACGCACTACGT
CTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCGTGATGCA
61 ProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGln
GCCGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAACCCA
CGGCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGTCGGAGTGACATTGGGT
121 LeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySer
GCTCCTGAGGCGACTGCACCAAGTGGATAAGCTCGGAGTGTACCACTCCATGCTCCGGTTC
CGAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGTGAGGTACGAGGCCAAG
181 TrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeu
CTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGGCT
GACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACCTCGCTGAAATTCTGGACCGA
241 LysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyr
AAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCCTGCCAGCGCGGGTA
TTTTCGATTGAGTACGGTGTGACGGACCCTAGGGGAAACACAGGACGGTCGCGCCCAT
301 LysGlyValTrpArgVal
TAAGGGGGTCTGGCGAGTG
ATTCCCCCAGACCGCTCAC

1 AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
 GGCTTACATGTCCTCAAGGCTCATGGATCGATCCTTAACATCAGGACCGGGTGAGAACAAAT
 CCGAATGTACAGGTTCCGAGTACCTTAGCTAGGATTGTAGTCTGCTGCCCCACTCTTGTTA
 61 ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
 TACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTTCTTGCCGACGGCGGTG
 ATGGTGACCGTCGGGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCAC
 121 SerGlyGlyAlaTyrAspIleIleCysAspGluCysHisSerThrAspAlaThrSer
 CTCGGGGGGCGCTTATGACATAATAATTGTGACGAGTGCCACTCCACGGATGCCACATC
 GAGCCCCCGGAATACTGTATTATTAACACTGCTCACGGTGAGTGCTACGGTGCTAG
 181 IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
 CATCTTGGGCATCGGCACCTGCTTGACCAAGCAGAGACTGCGGGGGCAGACTGGTTGT
 GTAGAACCCGTAGCCGTGACAGGAACCTGGTTCTGCTGACGCCCCCGCTCTGACCAACA
 241 LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluGluVal
 GCTCGCCACCGCCACCCCTCCGGCTCCGTCACTGTGCCCCATCCCAACATCGAGGAGGT
 CGAGCGGTGGCGTGGGAGGCCCGAGGCAGTGACACGGGTAGGGTTGTAGCTCCTCCA
 301 AlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIle
 TGCTCTGTCCACCACCGGAGAGATCCCTTTTACGGCAAGGCTATCCCCCTCGAAGTAAT
 ACGAGACAGGTGGTGGCTCTCTAGGGAAATAATGCCGTTCCGATAGGGGAGCTTCATTA

 361 LysGlyGlyArgHisLeuIlePheCysHisSerLysLysLysCysAspGluLeuAlaAla
 CAAGGGGGGAGACATCTCATCTTCTGTCTCATTTCAAAGAAAGTGCAGCAACTCGCCGC
 GTTCCCCCCCCTCTGTAGAGTAGAAGACAGTAAGTTTCTTCTTCCAGCTGCTTGAGCGGCG
 -----Overlap with 37b-----
 421 LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
 AAAGCTGGTCGCATTGGGCATCAATGCCGTGGCCCTACTACCGCGGTCTTGACGTGTCCGT
 TTTTCGACCGGTAAACCCGTAGTTACGGCACCCGGATGATGGGCCAGAACTGCACAGGCA

 481 IleProThr
 CATCCCGACCCAG
 GTAGGGCTGGTC

FIG. 12



FIG. 13

1 CysSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCys
ACTGCAGCCTCACTGTAACCCAGCTCCTGAGGCGACTGCACCAGTGGATAAGCTCGGAGT
TGACGTCGGAGTGACATTGGGTTCGAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCA

61 ThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeu
GTACCACTCCATGCTCCGGTTCCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGT
CATGGTGAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCTGACCTATACGCTCCACA.

-----Overlap with 33b-----
121 SerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGlyIleProPhe
TGAGCGACTTTAAGACCTGGCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCCT
ACTCGCTGAAATTCTGGACCGATTTTCGATTTCGAGTACGGTGTGACGGACCCTAGGGGA

181 ValSerCysGlnArgGlyTyrLysGlyValTrpArgGlyAspGlyIleMethHisThrArg
TTGTGTCCTGCCAGCGCGGTATAAGGGGGTCTGGCGAGGGGACGGCATCATGCACACTC
AACACAGGACGGTCGCGCCCATATTCCCCCAGACCGCTCCCCCTGCCGTAGTACGTGTGAG

241 CysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArgIleValGly
GCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCG
CGACGGTGACACCTCGACTCTAGTGACCTGTACAGTTTTTGGCCCTGCTACTCCTAGCAGC

301 ProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGly
GTCCTAGGACCTGCAGGAACATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGG
CAGGATCCTGGACGTCCTTGTACACCTCACCTGGAAGGGGTAATTACGGATGTGGTGCC

361 ProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGlu
GCCCCCTGTACCCCCCTTCCTGCGCCGAACCTACACGTTTCGCGCTATGGAGGGTGTCTGCAG
CGGGGACATGGGGGAAGGACGCGGCTTGATGTGCAAGCGCGATACCTCCCACAGACGTC

421 GluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAsp
AGGAATATGTGGAGATAAGGCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTG
TCCTTATACACCTCTATTCCGTCCACCCCTGAAGGTGATGCACTGCCATACTGATGAC

481 AsnLeuLysCysProCysGlnValProSerProGluPhePheThrGlu
ACAATCTCAAATGCCCGTGCCAGGTCCCATCGCCCGAATTTTTTCACAGAAT
TGTTAGAGTTTACGGGCACGGTCCAGGGTAGCGGGCTTAAAAAGTGCTTA

FIG. 14A

AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
1 TGCTTACATGTCCAAGGCTCATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAAT
ACGAATGTACAGGTTCCGAGTACCCTAGCTAGGATTGTAGTCTGGCCCCACTCTTGTTA

ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
61 TACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTTCCTTGCCGACGGCGGGTG
ATGGTGACCGTCGGGGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCAC

SerGlyGlyAlaTyrAspIleIleIleCysAspGluCysHisSerThrAspAlaThrSer
121 CTCGGGGGGCGCTTATGACATAATAATTTGTGACGAGTGCCACTCCACGGATGCCACATC
GAGCCCCCGCGAATACTGTATTATTAACACTGCTCACGGTGAGGTGCCTACGGTGTAG

IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
181 CATCTTGGGCATCGGCACTGTCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGT
GTAGAACCCGTAGCCGTGACAGGAAGTGGTTCGTCTCTGACGCCCCGCTCTGACCAACA

LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluGluVal
241 GCTCGCCACCGCCACCCCTCCGGGCTCCGTCACTGTGCCCCATCCCAACATCGAGGAGGT
CGAGCGGTGGCGGTGGGGAGGCCCGAGGCAGTGACACGGGGTAGGGTTGTAGCTCCTCCA

AlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIle
301 TGCTCTGTCCACCACCGGAGAGATCCCTTTTTACGGCAAGGCTATCCCCCTCGAAGTAAT
ACGAGACAGGTGGTGGCCTCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATTA

LysGlyGlyArgHisLeuIlePheCysHisSerLysLysLysCysAspGluLeuAlaAla
361 CAAGGGGGGGGAGACATCTCATCTTCTGTCAATTCAAAGAAGAAGTGCGACGAAGTCCGCCG
GTTCCCCCCTCTGTAGAGTAGAAGACAGTAAGTTTCTTCTTACGCTGCTTGAGCGGCG

LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
421 AAAGCTGGTCGCATTGGGCATCAATGCCGTGGCCTACTACCGCGGTCTTGACGTGTCCGT
TTTCGACCAGCGTAACCCGTAAGTTACGGCACCGGATGATGGCGCCAGAACTGCACAGGCA

IleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThrGlyTyrThr
481 CATCCCGACCGCGCGATGTTGTGCTGCTGGCAACCGATGCCCTCATGACCGGCTATAC
GTAGGGCTGGTCGCCGCTACAACAGCAGCACCGTTGGCTACGGGAGTACTGGCCGATATG

GlyAspPheAspSerValIleAspTyrAsnThrCysValThrGlnThrValAspPheSer
541 CGGCGACTTCGACTCGGTGATAGACTACAATACGTGTGTCAACCCAGACAGTGCATTTTCAG
GCCGCTGAAGCTGAGCCACTATCTGATGTTATGCACACAGTGGGTCTGTACGCTAAAGTC

LeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThr
601 CCTTGACCCTACCTTACCATTGAGACAATCACGCTCCCCAGGATGCTGTCTCCCGCAC
GGAACTGGGATGGAAGTGGTAACTCTGTTAGTGCGAGGGGGTCTACGACAGAGGGCGTG

GlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGly
661 TCAACGTGCGGGCAGGACTGGCAGGGGGAAGCCAGGCATCTACAGATTTGTGGCACCAGG
AGTTGCAGCCCCCTCTGACCGTCCCCCTTCGGTCCGTAGATGTCTAAACACCGTGCCCC

GluArgProSerGlyMetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCys
721 GGAGCGCCCCCTCCGGCATGTTGACTCGTCCGTCTCTGTGAGTGCTATGACGCAGGCTG
CCTCGCGGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGAC

AlaTrpTyrGluLeuThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThr
781 TGCTTGGTATGAGCTCACGCCCCGCGAGACTACAGTTAGGCTACGAGCGTACATGAACAC
ACGAACCATACTCGAGTGCGGGCGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGTG

ProGlyLeuProValCysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeu
841 CCCGGGGCTTCCCGTGTGCCAGGACCATCTTGAATTTTGGGAGGGCGTCTTTACAGGCCT
GGGCCCCGAAGGGCACACGGTCTGGTAGAACTTAAACCCCTCCCGCAGAAATGTCCGGA



FIG. 14B

901 ThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAspLeuProTyr
 CACTCATATAGATGCCCACTTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCCTTCCTTA
 GTGAGTATATCTACGGGTGAAAGATAGGGTCTGTTTCGTCTACCCCTCTTGGAAGGAAT
 961 LeuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAsp
 CCTGGTAGCGTACCAAGCCACCGTGTGCGCTAGGGCTCAAGCCCCTCCCCATCGTGGGA
 GGACCATCGCATGGTTCGGTGGCACACGCGATCCCGAGTTCGGGGAGGGGGTAGCACCCCT
 1021 GlnMetTrpLysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeu
 CCAGATGTGGAAGTGTGTTGATTGCGCTCAAGCCCACCCCTCCATGGGCCAACACCCCTGCT
 GGTCTACACCTTCACAACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTGTGGGGACGA
 1081 TyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIle
 ATACAGACTGGGCGCTGTTTCAGAAATGAAATCACCCCTGACGCACCCAGTCACCAAATACAT
 TATGTCTGACCCGCGACAAGTCTTACTTTAGTGGGACTGCGTGGGTCAGTGGTTTATGTA
 1141 MetThrCysMetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGly
 CATGACATGCATGTGCGCCGACCTGGAAGTTCGTACGAGCACCTGGGTGCTCGTTGGCGG
 GTACTGTACGTACAGCCGGCTGGACCTCCAGCAGTGTCTGTGGACCCACGAGCAACCGCC
 1201 ValLeuAlaAlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArg
 CGTCCTGGCTGCTTTGGCCGCGTATTGCCTGTCAACAGGCTGCGTGGTCATAGTGGGCGAG
 GCAGGACCGACGAAACCGGCGCATAACGGACAGTTGTCCGACGCACCAAGTATCACCCGTC
 1261 ValValLeuSerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPhe
 GGTCGTCTTGTCCGGGAAGCCGGCAATCATACCTGACAGGGAAGTCTCTACCGAGAGTT
 CCAGCAGAACAGGCCCTTCGGCCGTTAGTATGGACTGTCCCTTCAGGAGATGGCTCTCAA
 1321 AspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAla
 CGATGAGATGGAAGAGTGTCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGC
 GCTACTCTACCTTCTCACGAGAGTTCGTGAATGGCATGTAGCTCGTTCCTACTACGAGCG
 1381 GluGlnPheLysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluVal
 CGAGCAGTTCAAGCAGAAAGGCCCTCGGCCTCTGACAGCCGCGTCCCGTCAGGCAGAGGT
 GCTCGTCAAGTTCGTCTTCCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCA
 1441 IleAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMet
 TATCGCCCTGCTGTCCAGACCAACTGGCAAAACTCGAGACCTTCTGGGCGAAGCATAT
 ATAGCGGGGACGACAGGTCTGGTTGACCGTTTTTGTAGCTCTGGAAGACCCGCTTCGTATA
 1501 TrpAsnPheIleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnPro
 GTGGAACCTTCATCAGTGGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCC
 CACCTTGAAGTAGTCACCCCTATGTTATGAACCGCCCGAACAGTTGCGACGGACCATTTGGG
 1561 AlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
 CGCCATTGCTTCATTGATGGCTTTTACAGCTGCTGTACCCAGCCCACTAACCACTAGCCA
 GCGGTAACGAAGTAACTACCGAAAATGTCGACGACAGTGGTTCGGGTGATTGGTGATCGGT
 1621 ThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAla
 AACCTCCTCTTCAACATATTGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCCCCGGTGC
 TTGGGAGGAGAAAGTTGTATAACCCCCCACCACCGACGGGTTCGAGCGGCGGGGGCCACG
 1681 AlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGly
 CGCTACTGCCTTTGTGGGCGCTGGCTTAGCTGGCGCCGCCATCGGCAGTGTGTTGACTGGG
 GCGATGACGGAACACCCGCGACCGAATCGACCGCGGGGTAGCCGTCACAACCTGACCC

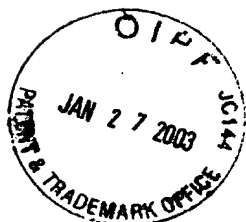


FIG. 14C

1741 LysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAla
 GAAGGTCCTCATAGACATCCTTGACGGGTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGC
 CTTCCAGGAGTATCTGTAGGAACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACCG
 1801 PheLysIleMetSerGlyGluValProSerThrGluAspLeuValAsnLeuLeuProAla
 ATTCAAGATCATGAGCGGTGAGGTCCCCTCCACGGAGGACCTGGTCAATCTACTGCCCCG
 TAAGTTCTAGTACTCGCCACTCCAGGGGAGGTGCCTCCTGGACCAGTTAGATGACGGGCG
 1861 IleLeuSerProGlyAlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHis
 CATCCTCTCGCCCGGAGCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCA
 GTAGGAGAGCGGGCCTCGGGAGCATCAGCCGCACCAGACACGTCGTTATGACGCGGGCGT
 1921 ValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArg
 CGTTGGCCCGGGCGAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCTCCCG
 GCAACCGGGCCCGCTCCCCGTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGC
 1981 GlyAsnHisValSerProThrHisTyrValProGluSerAspAlaAlaAlaArgValThr
 GGGGAACCATGTTTCCCCACGCACTACGTGCCGGAGAGCGATGCAGCTGCCGCGTCCAC
 CCCCTTGGTACAAAGGGGGTGCCTGATGCACGGCCTCTCGCTACGTCGACGGGCGCAGTG
 2041 AlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSer
 TGCCATACTCAGCAGCCTCACTGTAACCCAGCTCCTGAGGCGACTGCACCAGTGGATAAG
 ACGGTATGAGTCGTCGGAGTGACATTGGGTGAGGACTCCGCTGACGTGGTCACCTATTC
 2101 SerGluCysThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCys
 CTCGGAGTGTACCACTCCATGCTCCGGTTCCTGGCTAAGGGACATCTGGGACTGGATATG *
 GAGCCTCATATGGTGAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCTGACCTATAC
 2161 GluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGly
 CGAGGTGTTGAGCGACTTTAAGACCTGGCTAAAAGCTAAGCTCATGCCACAGCTGCCTGG
 GCTCCACAACCTCGCTGAAATTCTGGACCGATTTTCGATTTCGAGTACGGTGTGACGGACC
 2221 IleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMet
 GATCCCCTTTGTGTCCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGTGGACGGCATCAT
 CTAGGGGAAACACAGGACGGTCCGCGCCCATATTCCCCCAGACCGCTCACCTGCCGTAGTA
 2281 HisThrArgCysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArg
 GCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGAG
 CGTGTGAGCGACGGTGACACCTCGACTCTAGTGACCTGTACAGTTTTTGCCTGCTACTC
 2341 IleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyr
 GATCGTCGGTCCTAGGACCTGCAGGAACATGTGGAGTGGGACCTTCCCCATTAATGCCTA
 CTAGCAGCCAGGATCCTGGACGTCTTGTACACCTCACCTGGAAGGGGTAAATTACGGAT
 2401 ThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgVal
 CACCACGGGCCCCTGTACCCCCCTTCTGCGCCGAACCTACACGTTCCGCGCTATGGAGGGT
 GTGGTGGCCGGGGACATGGGGGGAAGGACGCGGCTTGATGTGCAAGCGCGATACTCCCA
 2461 SerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMet
 GTCTGCAGAGGAATATGTGGAGATAAGGCAGGTGGGGGACTTCCACTACGTGACGGGTAT
 CAGACGTCTCCTTATACACCTCTATTCCGTCCACCCCTGAAGGTGATGCACTGCCATA
 2521 ThrThrAspAsnLeuLysCysProCysGlnValProSerProGluPhePheThrGlu
 GACTACTGACAATCTCAAATGCCCGTGCCAGGTCCCATCGCCCGAATTTTTTACAGAAT
 CTGATGACTGTTAGAGTTTACGGGCACGGTCCAGGGTAGCGGGCTTAAAAAGTGTCTTA



FIG. 15

AlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThr
 1 GGC GGT GGA CTTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCAC
 CCGCCACCTGAAATAGGGACACCTCTTGATCTCTGTTGGTACTCCAGGGGCCACAAGTG

AspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaPro
 61 GGATAACTCCTCTCCACAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCC
 CCTATTGAGGAGAGGTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGG

ThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysVal
 121 CACAGGCAGCGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGT
 GTGTCCGTCGCCGTTTTCTGTTGTTCCAGGGCCGACGTATACGTCGAGTCCCGATATTCCA

LeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAla
 181 GCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGC
 CGATCATGAGTTGGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCG

-----Overlap with 40b-----
 HisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIle
 241 TCATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCAT
 AGTACCCTAGCTAGGATTGTAGTCTTGCCCCACTCTTGTTAATGGTGACCGTCGGGGTA

ThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAsp
 301 CACGTACTCCACCTACGGCAAGTTCCTTGCCGACGGCGGGTGCTCGGGGGGGCGCTTATGA
 GTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAATACT

IleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThr
 361 CATAATAATTTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATTGGCAC
 GTATTATTAAACACTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTG

ValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrPro
 421 TGTCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCC
 ACAGGAACTGGTTCGTCTCTGACGCCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGG

ProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGly
 481 TCCGGGCTCCGTCACGTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGG
 AGGCCCGAGGCAGTGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCC

GluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeu
 541 AGAGATCCCTTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCT
 TCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCTCTGTAGA

IlePheCysHisSerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGly
 601 CATCTTCTGTCAATTCAAAGAAGAAGTGCGACGAACCTCGCCGAAAGCTGGTTCGCATTGGG
 GTAGAAGACAGTAAGTTTCTTCTTCACGCTGCTTGAGCGGC GTTTCGACCAGCGTAACCC

IleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAsp
 661 CATCAATGCCGTGGCCTACTACGCGGTCTTGACGTGTCCGTCATCCCGACCAGCGGGCGA
 GTAGTTACGGCACCGGATGATGGCGCCAGAAGTGCACAGGCAGTAGGGCTGGTCGCCGCT

ValValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerVal
 721 TGTTGTCGTCGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGT
 ACAACAGCAGCACCGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCA

IleAspCysAsnThrCys
 781 GATAGACTGCAATACGTGTG
 CTATCTGACGTTATGCACAC



FIG. 16

ProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIlePro
 1 CTCCTGCACTTGCGGCTCCTCGGACCTTTACCTGGTCACGAGGCACGCCGATGTCATTG
 GAGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAAGTGTCCGTGCGGCTACAGTAAG

ValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyrLeu
 61 CCGTGCGCCGGCGGGGTGATAGCAGGGGCGAGCCTGCTGTCGCCCCGGCCCATTTCTACT
 GGCACGCGGCCGCCCACTATCGTCCCGTCGGACGACAGCGGGGCCGGGTAAAGGATGA

LysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePheArg
 121 TGAAAGGCTCCTCGGGGGGTCCGCTGTTGTGCCCCGCGGGGCACGCCGTGGGCATATTTA
 ACTTTCCGAGGAGCCCCCAGGCGACAACACGGGGCGCCCCGTGCGGCACCCGTATAAAT

-----Overlap with
 AlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIleProValGluAsnLeu
 181 GGGCCGCGGTGTGCACCCGTGGAGTGGCTAAGGCGGTGGACTTTATCCCTGTGGAGAACC
 CCCGGCGCCACACGTGGGCACCTACCGATTCCGCCACCTGAAATAGGGACACCTCTTG

33c-----
 GluThrThrMetArgSerProValPheThrAspAsnSer
 241 TAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTCCTC
 ATCTCTGTTGGTACTCCAGGGGCCACAAGTGCCTATTGAGGAG

FIG. 17

GlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGly
 1 GGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCAGCAGACAAGGGGCCTCCTAGG
 CCCCACCTCCAACGACCGCGGGTAGTGCCGCATGCGGGTCTGTCTGTTCCCCGGAAGGATCC

CysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIle
 61 GTGCATAATCACCAGCCTAACTGGCCGGGACAAAAACCAAGTGGAGGGTGAGGTCCAGAT
 CACGTATTAGTGGTCGGATTGACCGGCCCTGTTTTTGGTTACCTCCCACTCCAGGTCTA

ValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThrVal
 121 TGTGTCAACTGCTGCCCAAACCTTCTGGCAACGTGCATCAATGGGGTGTGCTGGACTGT
 ACACAGTTGACGACGGGTTTGGAAAGGACCGTTGCACGTAGTTACCCACACGACCTGACA

TyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyProValIleGlnMetTyr
 181 CTACCACGGGGCCGGAACGAGGACCATCGCGTCACCCAAGGGTCCTGTCATCCAGATGTA
 GATGGTGCCCCGGCCTTGCTCCTGGTAGCGCAGTGGGTTCCAGGACAGTAGGTCTACAT

ThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeuThr
 241 TACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCCGCAAGGTAGCCGCTCATTGAC
 ATGGTTACATCTGTTCTGGAACACCCGACCGGGCGAGGCGTTCCATCGGCGAGTAAC TG

-----Overlap with 8h-----
 ProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHis
 301 ACCCTGCACTTGCGGCTCCTCGGACCTTTACCTGGTCACGAGGCACG
 TGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAAGTGTCCGTGC





FIG. 18

AsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeu
1 GAACATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCTGTACCCCCCT
CTTGTACACCTCACCTGGAAGGGGTAATTACGGATGTGGTGCCCGGGGACATGGGGGGA
-----Overlap with 25c-----
ProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIle
61 TCCTGCGCCGAACCTACACGTTTCGCGCTATGGAGGGTGTCTGCAGAGGAATACGTGGAGAT
AGGACGCGGGCTTGATGTGCAAGCGCGATACCTCCCACAGACGTCTCCTTATGCACCTCTA

ArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysPro
121 AAGGCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTTAAATGCCC
TTCCGTCCACCCCCGAAGGTGATGCACTGCCATACTGATGACTGTTAGAATTTACGGG

CysGlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPhe
181 GTGCCAGGTCCCATCGCCCGAATTTTTTACAGAATTGGACGGGGTGCGCCTACATAGGTT
CACGGTCCAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAA

AlaProProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGlu
241 TGCGCCCCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTGAGAGTAGGACTCCACGA
ACGCGGGGGGACGTTTCGGGAACGACGCCCTCCTCCATAGTAAGTCTCATCCTGAGGTGCT

TyrProValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSer
301 ATACCCGGTAGGGTCGCAATTACCTTGCGAGCCCGAACCAGGACGTGGCCGTGTTGACGTC
TATGGGCCATCCAGCGTTAATGGAACGCTCGGGCTTGGCCTGCACCGGCACAACCTGCAG

MetLeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGly
361 CATGCTCACTGATCCCTCCCATATAACAGCAGAGGCGGCCGGGCGAAGGTTGGCGAGGGG
GTACGAGTGACTAGGGAGGGTATATTGTCGTCTCGCCGGCCCGCTTCCAACCGCTCCCC

SerProProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAla
421 ATACCCCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGC
TAGTGGGGGGAGACACCGGTGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCG

ThrCysThrAlaAsnHisAspSerProAsp
481 AACTTGACCGCTAACCATGACTCCCCTGAT
TTGAACGTGGCGATTGGTACTGAGGGGACTA



FIG. 19

-----Overlap with 14c-----
1 SerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThrAlaAspHis
AGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGACCGCTAACCAT
TCGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGTTGAACGTGGCGATTGGTA

61 AspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlu
GACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAGGCAGGAGATGGGCGGC
CTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCCGTCTCTACCCGCCG

121 AsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSerPheAspProLeu
AACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGACTCCTTCGATCCGCTT
TTGTAGTGGTCCCAACTCAGTCTTTTGTTCACCACTAAGACCTGAGGAAGCTAGGCGAA

181 ValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArgLysSerArg
GTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAAATCCTGCGGAAGTCTCGG
CACC GCCTCCTCCTGCTCGCCCTCTAGAGGCATGGGCGTCTTTAGGACGCCTTCAGAGCC

241 ArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProProLeuValGlu
AGATTCGCCCAGGCCCTGCCCCTTTGGGCGCGGCCGACTATAACCCCCCGCTAGTGGAG
TCTAAGCGGGTCCGGGACGGGCAAACCCGCGCCGGCCTGATATTGGGGGGCGATCACCTC

301 ThrTrpLysLysProAspTyrGluProProValValHisGlyCysProLeuProProPro
ACGTGGAAAAAGCCCGACTACGAACACCTGTGGTCCATGGCTGTCCGCTTCCACCTCCA
TGCACCTTTTTTCGGGCTGATGCTTGGTGGACACCAGGTACCGACAGGCGAAGGTGGAGGT

361 LysSerProProValPro
AAGTCCCCTCCTGTGCCG
TTCAGGGGAGGACACGGC

FIG. 20

1 ValTrpAlaArgProAspTyrAsnProProLeuValGluThrTrpLysLysProAspTyr
CGTTTGGGCGCGGCCGACTATAACCCCCCGCTAGTGGAGACGTGGAAAAAACCCGACTA
GCAAAACCCGCGCCGGCCTGATATTGGGGGGCGATCACCTCTGCACCTTTTTTGGGCTGAT

-----Overlap with 8f-----
61 GluProProValValHisGlyCysProLeuProProProLysSerProProValProPro
CGAACCACCTGTGGTCCATGGCTGCCGCTTCCACCTCCAAAGTCCCCTCCTGTGCCTCC
GCTTGGTGGACACCAAGGTACCGACGGGCGAAGGTGGAGGTTTCAGGGGAGGACACGGAGG

121 ProArgLysLysArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAlaGlu
GCCTCGGAAGAAGCGGACGGTGGTCCTCACTGAATCAACCTATCTACTGCCTTGGCCGA
CGGAGCCTTCTTCGCCTGCCACCAGGAGTGACTTAGTTGGGATAGATGACGGAACCGGCT

181 LeuAlaThrArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThr
GCTCGCCACCAGAAGCTTTGGCAGCTCCTCAACTTCCGGCATTACGGGCGACAATACGAC
CGAGCGGTGGTCTTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCGCTGTTATGCTG

241 ThrSerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerPhe
AACATCCTCTGAGCCCCGCCCTTCTGGCTGCCCCCCCGACTCCGACGCTGAGTCCTTTGC
TTGTAGGAGACTCGGGCGGGGAAGACCGACGGGGGGGCTGAGGCTGCGACTCAGGAAACG



FIG. 21

1 AlaSerArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThrThr
GCCTCCAGAAAGCTTTGGCAGCTCCTCAACTTCCGGCATTACGGGCGACAATACGACAACA
CGGAGGTCTTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCCCGCTGTTATGCTGTTGT
-----Overlap with 33f-----
61 SerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSer
TCCTCTGAGCCCGCCCTTCTGGCTGCCCCCGACTCCGACGCTGAGTCCTATTCTCTCC
AGGAGACTCGGGCGGGGAAGACCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGG
121 MetProProLeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThr
ATGCCCCCCTGGAGGGGGAGCCTGGGGATCCGGATCTTAGCGACGGGTCATGGTCAACG
TACGGGGGGGACCTCCCCCTCGGACCCCTAGGCCTAGAATCGCTGCCAGTACCAGTTGC
181 ValSerSerGluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThr
GTCAGTAGTGAGGCCAACGCGGAGGATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACA
CAGTCATCACTCCGGTTGCGCCTCCTACAGCACACGACGAGTTACAGAATGAGAACCTGT
241 GlyAlaLeuValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSer
GGCGCACTCGTCACCCCGTGCGCCGCGGAAGAACAGAACTGCCCATCAATGCACTAAGC
CCGCGTGAGCAGTGGGGCACGCGGCGCCTTCTTGCTTTGACGGGTAGTTACGTGATTCTG
301 AsnSerLeuLeuArgHisHisAsnLeuValTyrSerThrThrSerArgSer
AACTCGTTGCTACGTCACCAACAATTTGGTGTATTCCACCACCTCACGCAAGT
TTGAGCAACGATGCAGTGGTGTAAACCACATAAGGTGGTGGAGTGCCTCAC

FIG. 22

1 GlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArg
GGCACCTATGTTTATAACCATCTGACTCCTCTTCGGGACTGGGCGCACAAACGGCTTGCGA
CCGTGGATACAAATATTGGTAGAGTGAGGAGAAGCCCTGACCCGCGTGTGCGGAACGCT
61 AspLeuAlaValAlaValGluProValValPheSerGlnMetGluThrLysLeuIleThr
GATCTGGCCGTGGCTGTAGAGCCAGTCGTCTTCTCCCAAATGGAGACCAAGCTCATCACG
CTAGACCGGCACCGACATCTCGGTGAGCAGAAAGAGGGTTACCTCTGGTTGAGTAGTGC
121 TrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArg
TGGGGGGCAGATACCGCCGCGTGCGGTGACATCATCAACGGCTTGCTGTTTCCGCCCCG
ACCCCCGTCTATGGCGGCGCACGCCACTGTAGTAGTTGCCGAACGGACAAAGGCGGGCG
181 ArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeu
AGGGGCGGGAGATACTGCTCGGGCCAGCCGATGGAATGGTCTCCAAGGGTTGGAGGTTG
TCCCCGGCCCTCTATGACGAGCCCGGTGCGCTACCTTACCAGAGGTTCCCAACCTCCAAC
241 LeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThr
CTGGCGCCCATCACGGCGTACGCCAGCAGACAAGGGGCTCCTAGGGTGCATAATCACC
GACCGCGGGTAGTGCCGCATGCGGGTCGTCTGTTCCCGGAGGATCCCACGTATTAGTGG
-----Overlap with 7e-----
301 SerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIleValSerThrAla
AGCCTAACTGGCCGGGACAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGTCAACTGCT
TCGGATTGACCGGCCCTGTTTTGTTTACCTCCCACTCCAGGTCTAACACAGTTGACGA
361 AlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrp
GCCCAAACCTTCTGGCAACGTGCATCAATGGGGTGTGCTGG
CGGGTTTGGAAAGGACCGTTGCACGTAGTTACCCACACGACC



FIG. 23

1 GlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLysArgTyr
GGCGGTGTTGTTCTCGTCGGGTGATGGCGCTGACTCTGTCACCATATTACAAGCGCTAT
CCGCCACAACAAGAGCAGCCCAACTACCGCGACTGAGACAGTGGTATAATGTTCCGCATA

61 IleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHis
ATCAGCTGGTGCTTGTGGTGGCTTCAGTATTTTCTGACCAGAGTGGGAAGCGCAACTGCAC
TAGTCGACCACGAACACCACCGAAGTCATAAAAGACTGGTCTCACCTTCGCGTTGACGTG

121 ValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeuMetCys
GTGTGGATTCCCCCCTCAACGTCCGAGGGGGGCGCGACGCCGTCATCTTACTCATGTGT
CACACCTAAGGGGGGAGTTGCAGGCTCCCCCGCGCTGCGGCAGTAGAATGAGTACACA

181 AlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAlaValPheGlyPro
GCTGTACACCCGACTCTGGTATTTGACATCACAAATTGCTGCTGGCCGTCTTCGGACCC
CGACATGTGGGCTGAGACCATAAACTGTAGTGGTTTAAACGACGACCGGCAGAAGCCTGGG

241 LeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGlnGlyLeu
CTTTGGATTCTTCAAGCCAGTTTGCTTAAAGTACCCTACTTTGTGCGCGTCCAAGGCCTT
GAAACCTAAGAAGTTCGGTCAAACGAATTTTCATGGGATGAAACACGCGCAGGTTCCGGAA

301 LeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMetValIle
CTCCGGTTCTGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGTGCAAATGGTTCATC
GAGGCCAAGACGCGCAATCGCGCCTTCTACTAGCCTCCGGTAATGCACGTTTACCAGTAG

361 IleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeuArgAsp
ATTAAGTTAGGGGCGCTTACTGGCACCTATGTTTATAACCATCTCACTCCTCTTCGGGAC
TAATTCAATCCCCGGAATGACCGTGGATACAAATATTGGTAGAGTGAGGAGAAGCCCTG

-----Overlap with 7f -----

421 TrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPheSerGln
TGGGCGCACACGGCTTGCGAGATCTGGCCGTGGCTGTAGAGCCAGTCGTCTTCTCCCAA
ACCCGCGTGTGCGGAACGCTCTAGACCGGCACCGACATCTCGGTCAGCAGAAGAGGGTT

481 MetGluThrLysLeuIleThrTrpGly
ATGGAGACCAAGCTCATCACGTGGGGGGC
TACCTCTGGTTTCGAGTAGTGACCCCCCG



FIG. 24

1 GluTyrValValLeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrp
GGGAGTACGTCGTTCTCCTGTTCTTCTGCTTGACAGACGCGCGCTCTGCTCCTGCTTGT
CCCTCATGCAGCAAGAGGACAAGGAAGACGAACGCTCTGCGCGCGCAGACGAGGACGAACA

61 MetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAla
GGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGAACCTCGTAATACTTAATG
CCTACTACGATGAGTATAGGGTTCGCCTCCGCCGAAACCTCTTGGAGCATTATGAATTAC

121 AlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrp
CAGCATCCCTGGCCGGGACGCACGGTCTTGATCCTTCCTCGTGTTCTTCTGCTTTGCAT
GTCGTAGGGACCGGCCCTGCGTGCCAGAACATAGGAAGGAGCACAGAAGACGAAACGTA

181 TyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeu
GGTATTTGAAGGGTAAGTGGGTGCCCCGAGCGGTCTACACCTTCTACGGGATGTGGCCTC
CCATAAACTTCCATTACCCACGGGCCTCGCCAGATGTGGAAGATGCCCTACACCGGAG

241 LeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAla
TCCTCCTGCTCCTGTTGGCGTTGCCCCAGCGGGCGTACGCGCTGGACACGGAGGTGGCCG
AGGAGGACGAGGACAACCGCAACGGGGTTCGCCGCGATGCGCGACCTGTGCCTCCACCGGC

-----Overlap with 11b-----

301 SerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLys
CGTCGTGTGGCGGTGTTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTCAACCATATTACA
GCAGCACACCGCCACAACAAGAGCAGCCCACTACCGCGACTGAGACAGTGGTATAATGT

361 ArgTyrIleSerTrpCysLeuTrpTrpLeuGln
AGCGCTATATCAGCTGGTGTGTTGGTGGCTTCAGAA
TCGCGATATAGTCGACCACGAACACCACCGAAGTCTT

FIG. 25

1 ProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSerMetProPro
CCAGCCCCTTCTGGCTGCCCCCGACTCCGACGCTGAGTCCTATTCTCCATGCCCCCC
GGTCGGGGAAGACCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGG

61 LeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSer
CTGGAGGGGGAGCCTGGGGATCCGGATCTTAGCGACGGGTCATGGTCAACAGTCAGTAGT
GACCTCCCCCTCGGACCCCTAGGCCTAGAATCGCTGCCAGTACCAGTTGTCAAGTCATCA

-----Overlap with 33g-----

121 GluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeu
GAGGCCAACGCGGAGGATGTCGTGTGCTGCTCAATGTCCTACTCTTGGACAGGCGCACTC
CTCCGGTTGCGCTCCTACAGCACACGACGAGTTACAGGATGAGAACCTGTCCGCGTGAG

181 ValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeu
GTCACCCCGTGCGCCGCGAAGAACAGAACTGCCCATCAATGCACTGAGCAACTCGTTG
CAGTGGGGCACGCGGCGCCTTCTTGTCTTTGACGGGTAGTTACGTGACTCGTTGAGCAAC

241 LeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLys
CTACGTCACCACAATTTGGTGTATTCCACCACCTCACGCAGTGCTTGCCAAAGGCAGAAAG
GATGCAGTGGTGTAAACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGTCTTC

301 LysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGly
AAAGTCACATTTGACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTAAGGAG
TTTCAGTGTAACCTGTCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCCTC

361 ValLysAlaAlaAlaSerLysValLysAlaAsnPhe
GTTAAAGCAGCGGCGTCAAAAGTGAAGGCTAACTTC
CAATTTGTCGCCGCGAGTTTTCACTTCCGATTGAAG



FIG. 26A

1 GluTyrValValLeuLeuPheLeuLeuLeuAlaAspAlaArgValCysSerCysLeuTrp
GGGAGTACGTCGTTCTCCTGTTCTTCTGCTTGCAGACGC6CGCTGCTCCTGCTTGT
CCCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCGCGCAGACGAGGACGAACA

61 MetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAla
GGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGAACCTCGTAATACTTAATG
CCTACTACGATGAGTATAGGGTTCGCTCCGCCGAAACCTCTTGGAGCATTATGAATTAC

121 AlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrp
CAGCATCCCTGGCCGGGACGCACGGTCTTGTATCCTTCCTCGTGTCTTCTGCTTTGCAT
GTCGTAGGGACCGGCCCTGCGTGCCAGAACATAGGAAGGAGCACAAGAAGACGAAACGTA

181 TyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeu
GGTATTTGAAGGGTAAGTGGGTGCCGAGCGGTCTACACCTTCTACGGGATGTGGCCTC
CCATAAACTTCCCATTCACCCACGGGCTCGCCAGATGTGGAAGATGCCCTACACCGGAG

241 LeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAla
TCCTCCTGCTCCTGTTGGCGTTGCCCGAGCGGCGTACGCGCTGGACACGGAGGTGGCCG
AGGAGGACGAGGACAACCGCAACGGGGTCGCCGCGATGCGCGACCTGTGCTCCACCGGC

301 SerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLys
CGTCGTGTGGCGGTGTTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTACCATATTACA
GCAGCACACCGCCACAACAAGAGCAGCCAACTACCGCGACTGAGACAGTGGTATAATGT

361 ArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGln
AGCGCTATATCAGCTGGTGCTTGTGGTGGCTTCACTATTTTCTGACCAGAGTGGAAGCGC
TCGCGATATAGTCGACCACGAACACCACCGAAGTCATAAAAGACTGGTCTCACCTTCGCG

421 LeuHisValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeu
AACTGCACGTGTGGATTCCCCCCTCAACGTCCGAGGGGGGCGCGACGCCGTATCTTAC
TTGACGTGCACACCTAAGGGGGGAGTTGCAGGCTCCCCCGCGCTGCGGCAGTAGAATG

481 MetCysAlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAlaValPhe
TCATGTGTGCTGTACACCGACTCTGGTATTTGACATCACCAAATTGCTGCTGGCCGTCT
AGTACACACGACATGTGGGCTGAGACCATAAACTGTAGTGGTTTAACGACGACCGGCAGA

541 GlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGln
TCGGACCCCTTTGGATTCTTCAAGCCAGTTTGCTTAAAGTACCCTACTTTGTGCGCGTCC
AGCCTGGGGAAACCTAAGAAGTTCGGTCAAACGAATTTTCATGGGATGAAACACGCGCAGG

601 GlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMet
AAGGCCCTTCTCCGGTTCTGCGCTTAGCGCGGAAGATGATCGGAGGCCATTACGTGCAAA
TTCCGGAAGAAGGCAAGACGCGCAATCGCGCTTCTACTAGCCTCCGGTAATGCACGTTT

661 ValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeu
TGGTCATCATTAAAGTTAGGGGCGCTTACTGGCACCTATGTTTATAACCATCTCACTCCTC
ACCAAGTAGTAATTCAATCCCCGCGAATGACCGTGGATACAAATATTGGTAGAGTGAGGAG

721 ArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPhe
TTCGGGACTGGGCGCACAACGGCTTGCAGATCTGGCCGTGGCTGTAGAGCCAGTCGTCT
AAGCCCTGACCCGCGTGTGCGGAACGCTTAGACCGGACCGACATCTCGGTACGACAGA

781 SerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGlyAspIle
TCTCCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGGCGTGACA
AGAGGGTTTACCTCTGGTTCGAGTAGTGACACCCCGTCTATGGCGGCGCACGCCACTGT

841 IleAsnGlyLeuProValSerAlaArgArgGlyArgGluIleLeuLeuGlyProAlaAsp
TCATCAACGGCTTGCTGTTTCCGCCCCGAGGGGCGGGAGATACTGCTCGGGCCAGCCG
AGTAGTTGCCGAACGGACAAAGGCGGGCGTCCCCGGCCCTCTATGACGAGCCCGGTCTGGC

901 GlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThr
ATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCAGCAGA
TACCTTACCAGAGGTTCCCACTCCAACGACCGGGGTAGTGCCGCATGCGGGTCTGCT



FIG. 26B

Arg6lyLeuLeuGlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGlu
961 CAAGGGGCTCCTAGGGTGCATAATCACCAGCCTAACTGGCCGGGACAAAACCAAGTGG
GTTCCCCGGAGGATCCCACGTATTAGTGGTCG6ATTGACCGGCCCTGTTTTGTTTACC

GlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGly
1021 AGGGTGAGGTCCAGATTGTGTCAACTGCTGCCCAAACCTTCTGGCAACGTGCATCAATG
TCCCACTCCAGGTCTAACACAGTTGACGACGGGTTTGAAGGACCCTTGACGTAGTTAC

ValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyPro
1081 GGGTGTGCTGGACTGTCTACCACGGGGCCGGAACGAGGACCATCGCGTCACCCAAGGGTC
CCCACACGACCTGACAGATGGTGCCCCGGCCTTGCTCCTGGTAGCGAGTGGGTCCCAG

ValIleGlnMetTyrThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGly
1141 CTGTCATCCAGATGTATACCAATGTAGACCAAGACCTTGTTGGGCTGGCCCGCTCCGCAAG
GACAGTAGGTCTACATATGGTTACATCTGGTTCTGGAACACCCGACCGGGCGAGGCGTTT

SerArgSerLeuThrProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHis
1201 GTAGCCGCTCATTGACACCTGCACTTGCGGCTCCTCGGACCTTTACCTGGTCACGAGGC
CATCGGCGAGTAAGTGTGGGACGTGAACGCCGAGGAGCCTGGAATGGACAGTGCTCCG

AlaAspValIleProValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArg
1261 ACGCCGATGTCAATCCCCTGCGCCGGCGGGGTGATAGCAGGGGACGCTGCTGTGCCCC
TGGCGCTACAGTAAGGGACGCGCGGCCGCCCACTATCGTCCCCTGCGACGACAGCGGGG

ProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAla
1321 GGCCCATTTCTACTTGAAGGCTCCTCGGGGGGTCCGCTGTTGTGCCCGCGGGGACG
CCGGCTAAAGGATGAACCTTCCGAGGAGCCCCCAGGCGACAACACGGGGCGCCCCGTGC

ValGlyIlePheArgAlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIle
1381 CCGTGGGCATATTTAGGGCCGCGGTGTGCACCCGTGGAGTGGCTAAGGCGGTGGACTTTA
GGCACCCGTATAAATCCCGGCGCCACACGTGGGCACCTACCGATTCCGCCACCTGAAAT

ProValGluAsnLeuGluThrThrMetArgSerProValPheThrAspAsnSerSerPro
1441 TCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTCCTCTC
AGGGACACCTCTTGGATCTCTGTTGGTACTCCAGGGGCCACAAGTGCTATTGAGGAGAG

ProValValProGlnSerPheGlnValAlaHisLeuHisAlaProThrGlySerGlyLys
1501 CACCAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCACAGGACGCGGCA
GTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGAGGTTACGAGGGTGTCCGTGCGCGT

SerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsnPro
1561 AAAGCACCAAGGTCCCGGTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTCAACC
TTTCGTGGTTCCAGGGCCGACGTATACGTGAGTCCCGATATTCCACGATCATGAGTTGG

SerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAspPro
1621 CCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGATCGATC
GGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTAGCTAG

AsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSerThrTyr
1681 CTAACATCAGGACCGGGGTGAGAACAAATTACCACTGGCAGCCCCATCACGTACTCCACCT
GATTGTAGTCTGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGATGAGGTGGA

GlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIleCysAsp
1741 ACGGCAAGTTCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGACATAATAATTTGTG
TGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCAATACTGTATTATTAACAC

GluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGlnAla
1801 ACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATCGGCACTGTCTTTGACCAAG
TGCTCACGGTGAGGTGCTACGGTGAGGTAGAACCCGTAGCCGTGACAGGAACCTGGTTC

GluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySerValThr
1861 CAGAGACTGCGGGGGCGAGACTGGTGTGTGCTCGCCACCGCCACCCCTCCGGGCTCCGTCA
GTCTCTGACGCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCCCGAGGACGT

ValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPheTyr
1921 CTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCCTTTTT
GACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCTCTTAGGGAAAAA



FIG. 26C

GlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHisSer
1981 ACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTTCTGTCTATT
TGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCTCTGTAGAGTAGAAGACAGTAA

LysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAla
2041 CAAAGAAGAAAGTGCAGCAACTCGCCGCAAAGCTGGTCGATTGGGCATCAATGCCGTGG
GTTTCTTCTTCACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCGTAGTTACGGCACC

TyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValValAla
2101 CCTACTACCGCGGTCTTGACGTGTCCGTATCCGACCAGCGGCGATGTTGTCTGTCTGG
GGATGATGGCGCCAGAACTGCACAGGCACTAGGGCTGGTCGCCGCTACAACAGCAGCACC

ThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThr
2161 CAACCGATGCCCTCATGACCGGTATACCGGCGACTTCGACTCGGTGATAGACTGCAATA
GTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTAT

CysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThrIleThr
2221 CGTGTGTACCCAGACAGTCGATTTTCAGCCTTGACCCTACCTTCACCATTGAGACAATCA
GCACACAGTGGGTCTGTCAAGTAAAGTCGGAACCTGGGATGGAAGTGGTAACTCTGTTAGT

LeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysPro
2281 CGCTCCCCCAGGATGCTGTCTCCCGCACTCAACGTCCGGGCAAGGACTGGCAGGGGGAAGC
GCGAGGGGGTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCTGACCCTCCCCCTTCG

GlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSerSerVal
2341 CAGGCATCTACAGATTTGTGGCACCAGGGGAGCGCCCTCCGGCATGTTGCACTCGTCCG
GTCCGTAGATGTCTAAACACCGTGCCCCCTCGCGGGAGGCCGTACAAGCTGAGCAGGC

LeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThrThr
2401 TCCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTCAGCCCCGCCGAGACTA
AGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCGGGCGGCTCTGAT

ValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeuGlu
2461 CAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCATCTTG
GTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACGGTCTGTTAGAAC

PheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGlnThr
2521 AATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCACTTTCTATCCCAGA
TTAAACCCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAAGATAGGGTCT

LysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAlaArg
2581 CAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTGCGCTA
GTTTCGTCTACCCCTCTTGAAGGAATGGACCATCGCATGGTTCGGTGGCACACGCGAT

AlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeuLysPro
2641 GGGCTCAAGCCCCTCCCCATCGTGGGACCAGATGTGGAAGTGTGTTGATTCGCTCAAGC
CCGAGTTCCGGGAGGGGGTAGCACCTGGTCTACACCTTCACAACTAAGCGGAGTTCC

ThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGluIleThr
2701 CCACCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTGAGAATGAAATCA
GGTGGGAGGTACCCGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACTTTAGT

LeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluValVal
2761 CCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTGCGCCGACCTGGAGGTCG
GGGACTGCGTGGGTCACTGGTTTATGTAGTACTGTACGTACAGCCGGCTGGACCTCCAAC

ThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeuSer
2821 TCACGAGCACCTGGGTGCTCGTTGGCGGCGTCTGGCTGCTTTGGCCGCGTATTGCTGT
AGTGCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACCGGCGCATAACGGACA

ThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIleIlePro
2881 CAACAGGCTGCGTGGTCAAGTGGGCAAGGTCGTCTTGTCCGGGAAGCCGGAATCATAC
GTTGTCCGACGCACCAAGTATCACCCGTCCAGCAGAACAGGCCCTTCGGCCGTTAGTATG



FIG. 26D

TyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeu
3001 CGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAAGGCCCTCGGCCTCC
GCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCCGGGAGCCGGAGG

GlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLys
3061 TGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCTGCTGTCCAGACCAACTGGCAAA
ACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGACCGTTT

LeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAla
3121 AACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATACTTGG
TTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCTATGTTATGAACC

GlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAla
3181 CGGGCTTGTCAACGCTGCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTACAGCTG
GCCCGAACAGTTGCGACGGACATTGGGGCGGTAAACGAAGTAACTACCGAAAATGTCGAC

ValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrpVal
3241 CTGTACCCAGCCCACTAACCCTAGCCAAACCTCCTCTTCAACATATTGGGGGGGTGGG
GACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATAACCCCCCACCC

AlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAlaGly
3301 TGGTGCCGAGCTCGCCGCCCCGGTGCCGCTACTGCTTTGTGGGCGCTGGCTTAGCTG
ACCGACGGGTCGAGCGGGGGGCCACGGCGATGACGGAACACCCGCGACCGAATCGAC

AlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyrGly
3361 GCGCCGCCATCGGCAGTGTGGACTGGGGAAGGTCTCATAGACATCCTTGACGGGTATG
CGCGGCGGTAGCCGTCAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCCATAC

AlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSerThr
3421 GCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCCTCCA
CGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGGAGGT

GluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGlyVal
3481 CGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGTCGGCG
GCCTCCTGGACAGTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGGAGCATCAGCCGC

ValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrpMet
3541 TGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCAGTGG
ACCAGACACGTCGTTATGACGCGGGCGTGCAACCGGGCCCGCTCCCCGTCACGTCACT

AsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrValPro
3601 TGAACCGGCTGATAGCCTTCGCTCCCGGGGGAACCATGTTTCCCCACGCACTACGTGC
ACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGC GTGATGCACG

GluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGlnLeu
3661 CGGAGAGCGATGCAGCTGCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAACCCAGC
GCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGTGGAAGTGACATTGGGTCG

LeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGlySerTrp
3721 TCCTGAGGCGACTGCACCAAGTGGATAAGCTCGGAGTGTAACCTCCATGCTCCGGTTCCT
AGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGTGAGGTACGAGGCCAAGGA

LeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeuLys
3781 GGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGGCTAA
CCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACCTCGTGAAATTCTGGACCGATT

AlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyrLys
3841 AAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCTTTGTGTCTGCCAGCGCGGGTATA
TTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGACGGTGC GCGCCATAT

GlyValTrpArgValAspGlyIleMetHisThrArgCysHisCysGlyAlaGluIleThr
3901 AGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATCA
TCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACTCTAGT



FIG. 26E

SerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAlaPro
4021 GGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCCTGTACCCCCCTTCTGCGC
CCTCACCTTGGAAAGGGTAATTACGGATGTGGTGCCCGGGGACATGGGGGGGAAGGACGCG

AsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGlnVal
4081 CGAACTACACGTTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAGGCAGG
GCTTGATGTGCAAGCGGATACCTCCACAGACGTCCTTATACACCTCTATTCCGTCC

GlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGlnVal
4141 TGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCCGTGCCAGG
ACCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAGAGTTTACGGGCACGGTCC

ProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaProPro
4201 TCCCATCGCCCCGAATTTTTCACAGAATTGGACGGGGTGCGCCTACATAGGTTTGCGCCCC
AGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAAACGCGGGG

CysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyrProVal
4261 CCTGCAAGCCCTTGTCTGCGGGAGGAGGTATCATTGAGAGTAGGACTCCACGAATACCCGG
GGACGTTTCGGGAACGACGCCCTCTCCATAGTAAGTCTCATCTGAGGTGCTTATGGGCC

GlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMetLeuThr
4321 TAGGGTCGCAATTAACCTTGCAGCGCCGAACCGGACGTGGCCGTGTTGACGTCCATGCTCA
ATCCAGCGTTAATGGAACGCTCGGGCTTGGCTGCACCGGCACAACCTGCAGGTACGAGT

AspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerProPro
4381 CTGATCCCTCCCATATAACAGCAGAGGCGCGCCGGGCGAAGGTTGGCGAGGGGATCACCCC
GACTAGGGAGGGTATATTGTCGTCTCGCCGGCCGCTTCCAACCGCTCCCTAGTGGGG

SerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThr
4441 CCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGCA
GGAGACACCGGTCGAGGAGCCGATCGGTGATAGGCGAGGTAGAGAGTTCCGTTGAACGT

AlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGlnGlu
4501 CCGCTAACCATGACTCCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAGGCGAGG
GGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCCGTCC

MetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAspSerPhe
4561 AGATGGGGCGCAACATCACCAGGGTTGAGTCAGAAAAACAAAGTGGTGATTCTGGACTCCT
TCTACCCGCCGTTGTAGTGGTCCCAACTCAGTCTTTTGTTCACCACTAAGACCTGAGGA

AspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArg
4621 TCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCGAGAAATCCTGC
AGCTAGGCGAACACCGCCTCCTCTGCTCGCCCTCTAGAGGCATGGGCGTCTTTAGGACG

LysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProPro
4681 GGAAGTCTCGGAGATTGCGCCAGGCCCTGCCGTTTTGGGCGCGGCCGGACTATAACCCCC
CCTTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAAACCGCGCCGGCTGATATTGGGGG

LeuValGluThrTrpLysLysProAspTyrGluProProValValHisGlyCysProLeu
4741 CGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACCACTGTGGTCCATGGCTGTCCGC
GCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGACACCAAGGTACCGACAGGCG

ProProProLysSerProProValProProProArgLysLysArgThrValValLeuThr
4801 TTCCACCTCCAAAGTCCCTCCTGTGCCTCCGCCCTCGGAAGAAGCGGACGGTGGTCCTCA
AAGGTGGAAGGTTTCAGGGGAGGACACGGAGGCGGAGCCTTCTTCGCTGCCACCAAGGAGT

GluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSerSer
4861 CTGAATCAACCTATCTACTGCCTTGGCCGAGCTCGCCACCAGAAGCTTTGGCAGCTCCT
GACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCGTCGAGGA

ThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGluProAlaProSerGlyCys
4921 CAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCCGCCCTTCTGGCT
GTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGAAGACCGA

ProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGluProGly
4981 GCCCCCGGACTCCGACGCTGAGTCCTATTCTCCATGCCCCCCTGGAGGGGGAGCCTG
CGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCCCTCGGAC



FIG. 26F

5041 AspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGluAsp
GGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGCGGAGG
CCCTAGGCCTAGAATCGCTGCCAGTACCAAGTTGCCAGTCATCACTCCGGTTGCGCCTCC

5101 ValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAlaAla
ATGTCGTGTGCTGCTCAATGTCTTACTCTTGACAGGCGCACTCGTCACCCCGTGCGCCG
TACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGCACGCGGC

5161 GluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHisAsnLeu
CGGAAGAACAGAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTCACCACAATT
GCCTTCTTGCTTTGACGGGTAGTTACGTGATTCTGTTGAGCAACGATGCAGTGGTGTAA

5221 ValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAspArg
TGGTGTATTCCACCACCTCACGCAAGTCTTGCCAAAGGCAGAGAAAGTCACATTTGACA
ACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGTCTTCTTTCAGTGTAAGTGT

5281 LeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAlaAlaSer
GACTGCAAGTTCTGGACAGCCATTACAGGACGTACTCAAGGAGGTTAAAGCAGCGGCGT
CTGACGTTCAAGACCTGTGCGTAATGGTCTGCATGAGTTCCTCCAATTCGTCGCCGCA

5341 LysValLysAlaAsnLeu
CAAAAGTGAAGGCTAACTTG
GTTTTCACTTCCGATTGAAC

FIG. 30

1 GlyGlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCys
GGGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGCAAGCGGCGTACTGACAAGTACTGT
CCCCCCTCTTGACGCCGATAGCGTCCACGGCGCGTTCCGCGCATGACTGTTGATCGACA

61 GlyAsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGln
GGTAACACCCTCACTTGTACATCAAGGCCGAGCAGCCTGTGAGCCGCGAGGGCTCCAG
CCATTGTGGGAGTGAACAATGTAGTTCCGGGCTCGTCGGACAGCTCGGCGTCCCGAGGTC

-----Overlap with 19g-----

121 AspCysThrMetLeuValCysGlyAspAspLeuValValIleCysGluSerAlaGlyVal
GACTGCACCATGCTCGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTC
CTGACGTGGTACGAGCACACCCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCAG

181 GlnGluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaPro
CAGGAGGACGCGGCGAGCCTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCC
GTCCTCCTGCGCCGCTCGGACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGCGGGGG

241 ProGlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsn
CCTGGGGACCCCCACAACCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCCAAC
GGACCCCTGGGGGGTGTGCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTG

301 ValSerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThr
GTGTCAGTCGCCCACGACGGCGCTGGAAAGAGGGTCTACTACCTACCCGTGACCCTACA
CACAGTCAGCGGGTGTGCCGCGACCTTCTCCAGATGATGGAGTGGGCACTGGGATGT

361 ThrProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeu
ACCCCTCTCGCGAGAGCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTA
TGGGGGGAGCGCTCTCGACGCAACCTCTGCTGTTCTGTGTGAGGTCAGTTAAGGACCGAT

421 GlyAsnIleIleMetPheAlaProThrLeuTrpAla
GGCAACATAATCATGTTTGGCCCCACACTGTGGGCG
CCGTTGTATTAGTACAAACGGGGGTGTGACACCCGC

FIG. 27

IlePheLysIleArgMetTyrValGlyValGluHisArgLeuGluAlaAlaCysAsn
 1 CCATATTTAAATCAGGATGTAAGTGGAGGGTCCGAACACAGGCTGGAAGCTGCCTGCA
 GGTATAAATTTTAGTCCTACATGCACCTCCCGAGCTTGTGTCCGACCTTCGACGGACGT

TrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeu
 61 ACTGGACGGGGCGAAGCTTGGCATCTGGAAGACAGGACAGGTCGAGCTCAGCCCGT
 TGACCTGCGCCCCCTTGCAACGCTAGACCTTCTGTCCCTGTCCAGGCTCGAGTCGGGCA

LeuLeuThrThrThrGlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeu
 121 TACTGCTGACCACTACACAGTGGCAGGTCTCCCGTGTCTTCAACAACCTACAGCCT
 ATGACGACTGGTGATGTGTCAACCGTCCAGGAGGGCACAAAGGAAGTGTGGGATGTCGGA

SerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyVal
 181 TGTCCACCGGCTCATCCACCTCCACAGAAATTTGGACGTGCAGTACTTGTACGGGG
 ACAGGTGCGCGGAGTAGGTGGAGGTGCTTGTAAACACCTGCACGTCATGAACATGCCCC

GlySerSerIleAlaSerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeu
 241 TGGGGTCAAGCATCGCGTCTCGGCCATTAAAGTGGAGTACGTCTTCTCCTGTCTCTTC
 ACCCCAGTTCGTAGCGCAGGACCCGGTAATTCACCTCATGCAGCAAGAGACAAAGGAAG

LeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGlu
 301 TGCTTGACAGACGGCGGCTCTGCTCTGTGGATGATGCTACTCATATCCCAAGCGG
 ACGAACGTCTGCGCGCAGACGAGGACGAACACCTACTACGATGAGTATAGGTTTCGCC

-----Overlap with 141-----

AlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeu
 361 AGCGGGCTTTGGAGAACCTCGTAATACTTAATGCAGCATCCCTGGCCGGGACGCACGGTC
 TCCGCCGAAACCTCTTGGAGCATTATGAATTACGTCTAGGACCGGCCCTGCCGTGCCAG

Val
 421 TTGTATC
 AACATAG





FIG. 28

-----Overlap with 39c-----
1 LeuLysGluValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerValGluGlu
TGCTCAAGGAGGTTAAAGCAGCGGCGTCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGG
ACGAGTTCCCTCCAATTTCTGTCGCCGAGTTTTCACTTCCGATTGAACGATAGGCATCTCC
61 AlaCysSerLeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAlaLysAsp
AAGCTTGCAGCCTGACGCCCCACACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAG
TTCGAACGTCGGACTGCGGGGGTGTGAGTCGGTTTAGGTTCAAACCAATACCCCGTTTTT
121 ValArgCysHisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAspLeuLeu
ACGTCCGTTGCCATGCCAGAAAGGCCGTAACCCACATCAACTCCGTGTGGAAAGACCTTC
TGCAGGCAACGGTACGGTCTTTCCGGCATTGGGTGTAGTTGAGGCACACCTTTCTGGAAG
181 GluAspAsnValThrProIleAspThrThrIleMetAlaLysAsnGluValPheCysVal
TGGAAGACAATGTAACACCAATAGACACTACCATCATGGCTAAGAACGAGGTTTTCTGCG
ACCTTCTGTACATTGTGGTTATCTGTGATGGTAGTACCGATTCTTGCTCCAAAAGACGC
241 GlnProGluLysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeuGlyVal
TTCAGCCTGAGAAGGGGGGTCGTAAGCCAGCTCGTCTCATCGTGTTCCTCCGATCTGGGCG
AAGTCGGACTCTTCCCCCAGCATTCCGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGC
301 ArgValCysGluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAlaValMet
TGCGCGTGTGCGAAAAGATGGCTTTGTACGACGTGGTTACAAAGCTCCCTTGGCCGTGA
ACGCGCACACGCTTTTCTACCGAAACATGCTGCACCAATGTTTCGAGGGGAACCGGCACT
361 GlySerSerTyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuValGlnAla
TGGAAGCTCCTACGGATTCCAATACTCACCAGGACAGCGGGTTGAATTCCTCGTGCAAG
ACCCTTCGAGGATGCCTAAGGTTATGAGTGGTCCTGTGCGCCCACTTAAGGAGCACGTTT
421 TrpLysSerLysLysThrProMetGlyPheSerTyrAspThrArgCysPheAspSerThr
CGTGGAAGTCCAAGAAAACCCCAATGGGGTTCTCGTATGATACCCGCTGCTTTGACTCCA
GCACCTTCAGGTTCTTTTGGGGTTACCCCAAGAGCATACTATGGGCGACGAAACTGAGGT
481 ValThrGluSerAspIleArgThrGluGluAla
CAGTCACTGAGAGCGACATCCGTACGGAGGAGGCA
GTCAGTGA CTCTCGCTGTAGGCATGCCTCCTCCGT



FIG. 29

1 GluPheLeuValGlnAlaTrpLysSerLysLysThrProMetGlyPheSerTyrAspThr
GAATTCCTCGTGCAAGCGTGGAAGTCCAAGAAAACCCCAATGGGGTTCTCGTATGATACC
CTTAAGGAGCACGTTTCGCACCTTCAGGTTCTTTTGGGGTTACCCCAAGAGCATACTATGC
-----Overlap with 35f-----
61 ArgCysPheAspSerThrValThrGluSerAspIleArgThrGluGluAlaIleTyrGln
CGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCGTACGGAGGAGGCAATCTACCAA
GCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGCATGCCTCCTCCGTTAGATGGTT
121 CysCysAspLeuAspProGlnAlaArgValAlaIleLysSerLeuThrGluArgLeuTyr
TGTTGTGACCTCGACCCCCAAGCCCGCGTGCCATCAAGTCCCTCACCGAGAGGCTTTAT
ACAACACTGGAGCTGGGGGTTCCGGGCGCACCGGTAGTTCAGGGAGTGGCTCTCCGAAATA
181 ValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArgAla
GTTGGGGGCCCTCTTACCAATTCAAGGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGCG
CAACCCCGGGGAGAATGGTTAAGTTCCCCCTCTTGACGCCGATAGCGTCCACGGCGCGC
241 SerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArgAla
AGCGGCGTACTGACAACCTAGCTGTGGTAACACCCTCACTTGCTACATCAAGGCCCGGGCA
TCGCCGCATGACTGTTGATCGACACCATTGTGGGAGTGAACGATGTAGTTCCGGGCCCCGT
301 AlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeuVal
GCCTGTCGAGCCGCAGGGCTCCAGGACTGCACCATGCTCGTGTGTGGCGACGACTTAGTC
CGGACAGCTCGGCGTCCCGAGGTCTTGACGTGGTACGAGCACACACCGCTGCTGAATCAG
361 ValIleCysGluSerAlaGlyValGlnGluAspAlaAla
GTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGCGAG
CAATAGACACTTTCGCGCCCCCAGGTCTCTCTGCGCGCTC

FIG. 31

GlyAlaGlyLysArgValTyrThrLeuThrArgAspProThrThrProLeuAlaArgAla
1 CGGCGCTGGAAGAGGGTCTACTACCTACCCGTGACCCCTACAACCCCTCGCGAGAGC
GCCGCGACCTTCTCCAGATGATGGAGTGGCACTGGGATGTTGGGGGAGCGCTCTCG

-----Overlap with 26g-----

AlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMetPhe
61 TCGGTGGGAGACAGCAAGACACACTCCAGTCAATTCTCTGGCTAGGCAACATAATCATGTT
ACGCACCCCTCTGTCGTTCTGTGTGAGGTCAGTTAAGGACCGATCCGTTGTATTAGTACAA

AlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIleAla
121 TGCCCCCACACTGTGGCGGAGGATGATACTGATGACCCATTCTTTAGCGTCCTATAGC
ACGGGGGTGTGACACCCGCTCCTACTACTGACTACTGGGTAAAGAAATCGCAGGAATATCG

ArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIleGlu
181 CAGGGACCAAGCTTGACAGGCCCTCGATTGCGAGATCTACGGGGCTGCTACTCCATAGA
GTCCCTGGTCGAAC TTGTCCGGGAGCTAACGCTCTAGATGCCCGGACGATGAGGTATCT

ProLeuAspLeuProProIleIleGlnArgLeu
241 ACCACTTGATCTACCTCCAATCATTTCAAGACTC
TGGTGAAC TAGATGGAGGTTAGTAAGTTTCTGAG



FIG. 32A

IlePheLysIleArgMetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsn
1 CCATATTTAAATCAGGATGTACGTGGGAGGGGTCGAACACAGGCTGGAAGCTGCCTGCA
GGTATAAATTTTAGTCCTACATGCACCCTCCCCAGCTTGTGTCCSACCTTCGACGGACGT

TrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeu
61 ACTGGACGCGGGGCGAACGTTGCGATCTGGAAGACAGGGACAGGTCCGAGCTCAGCCCCT
TGACCTGCGCCCCGCTTGCAACGCTAGACCTTCTGTCCCTGTCCAGGCTCGAGTCGGGCA

LeuLeuThrThrThrGlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeu
121 TACTGCTGACCACTACACAGTGGCAGGTCCTCCCGTGTTCTTCACAACCCTACCAGCCT
ATGACGACTGGTGATGTGTACCCGTCCAGGAGGGCACAAGGAAGTGTGGGATGGTCGGA

SerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyVal
181 TGTCCACCGGCTCATCCACCTCCACCAGAACATTGTGGACGTGCAGTACTTGTACGGGG
ACAGGTGGCCGGAGTAGGTGGAGGTGGTCTTGTAAACACCTGCACGTGATGAACATGCCCC

GlySerSerIleAlaSerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeu
241 TGGGGTCAAGCATCGCGTCTGGGCCATTAAAGTGGGAGTACGTCTTCTCTCTCTCTC
ACCCAGTTCGTAGCGCAGGACCCGGTAATTACCCCTCATGCAGCAAGAGGACAAGGAAG

LeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGlu
301 TGCTTGACGACGCGCGCTCTGCTCCTGCTTGTGGATGATGCTACTCATATCCCAAGCGG
ACGAACGTCTGCGCGCGCAGACGAGGACGAACACCTACTACGATGAGTATAGGGTTCCGC

AlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeu
361 AGGCGGCTTTGGAGAACCTCGTAATACTTAATGCAGCATCCCTGGCCGGGACGACGGTC
TCCGCCGAAACCTCTTGGAGCATTATGAATTACGTCTAGGGACCGGCCCTGCGTGCCAG

ValSerPheLeuValPhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGly
421 TTGTATCCTTCCTCGTGTCTTCTGCTTGTGATGGTATTTGAAGGGTAAGTGGGTGCCCG
AACATAGGAAGGAGCACAAGAAGACGAAACGTACCATAAACTTCCATTACCCACGGGC

AlaValTyrThrPheTyrGlyMetTrpProLeuLeuLeuLeuLeuAlaLeuProGln
481 GAGCGGTCTACACCTTCTACGGGATGTGGCCTCTCTCTCTCTCTCTGTTGGCGTTGCCCC
CTCGCCAGATGTGGAAGATGCCCTACACCGGAGAGGAGGACGAGGACAACCGCAACGGGG

ArgAlaTyrAlaLeuAspThrGluValAlaAlaSerCysGlyGlyValValLeuValGly
541 AGCGGGCGTACGCGCTGGACACGGAGGTGGCCGCGCTCGTGTGGCGGTGTTGTTCTCGTCG
TCGCCCCGATGCGCGACCTGTGCCTCCACCGGCGCAGCACACCGCCACAACAAGAGCAGC

LeuMetAlaLeuThrLeuSerProTyrTyrLysArgTyrIleSerTrpCysLeuTrpTrp
601 GGTTGATGGCGCTGACTCTGTACCATATTACAAGCGCTATATCAGCTGGTGCTTGTGGT
CCAACCTACCGCGACTGAGACAGTGGTATAATGTTGCGGATATAGTCGACCACGAACACCA

LeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsn
661 GGCTTCAGTATTTTCTGACCAGAGTGGAAAGCGCAACTGCACGTGTGGATTCCCCCCTCA
CCGAAGTCATAAAGACTGGTCTCACCTTCGCGTTGACGTGCACACCTAAGGGGGGGAGT

ValArgGlyGlyArgAspAlaValIleLeuLeuMetCysAlaValHisProThrLeuVal
721 ACGTCCGAGGGGGGCGCGACGCCGTCTTACTCATGTGTGCTGTACACCCGACTCTGG
TGCAGGCTCCCCCGCGCTGCGGCAGTAGAATGAGTACACACGACATGTGGGCTGAGACC

PheAspIleThrLysLeuLeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAlaSer
781 TATTTGACATCACCAAATTGCTGCTGGCCGTCTTCGGACCCCTTTGGATTCTTCAAGCCA
ATAAACTGTAGTGGTTTAACGACGACCGGCAGAAAGCCTGGGGAAACCTAAGAAGTTCGGT

LeuLeuLysValProTyrPheValArgValGlnGlyLeuLeuArgPheCysAlaLeuAla
841 GTTTGCTTAAAGTACCCTACTTTGTGCGCGTCCAAGGCCTTCTCCGGTTCTGCGCGTTAG
CAAACGAATTTTCATGGGATGAAACACGCGCAGGTTCCGGAAGAGGCCAAGACGCGCAATC



FIG. 32B

ArgLysMetIleGlyGlyHisTyrValGlnMetValIleIleLysLeuGlyAlaLeuThr
901 CGCGGAAGATGATCGGAGGCCATTACGTGCAAATGGTCATCATTAAAGTTAGGGGCGCTTA
GCGCCTTCTACTAGCCTCCGGTAATGCACGTTTACCAGTAGTAATTCAATCCCCGCGAAT

GlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArg
961 CTGGCACCTATGTTTATAACCATCTCACTCCTCTTCGGGACTGGGCGCACAAACGGCTTGC
GACCGTGGATACAAATATTGGTAGAGTGAGGAGAAGCCCTGACCCGCGTGTGGCGAACG

AspLeuAlaValAlaValGluProValValPheSerGlnMetGluThrLysLeuIleThr
1021 GAGATCTGGCCGTGGCTGTAGAGCCAGTCGTCTTCTCCCAAATGGAGACCAAGCTCATCA
CTCTAGACCGGCACCGACATCTCGGTACGAGAAAGAGGGTTTACCTCTGGTTCGAGTAGT

TrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArg
1081 CGTGGGGGGGAGATACCGCCGCGTGCAGTGCATCATCAACGGCTTGCCTGTTTCCGCCC
GCACCCCCGCTCTATGGCGGCGCACGCCACTGTAGTAGTTGCCGAACGGACAAAGGCGGG

ArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeu
1141 GCAGGGGGCGGGAGATACTGCTCGGGCCAGCCGATGGAATGGTCTCCAAGGGGTGGAGGT
CGTCCCCGGCCCTCTATGACGAGCCCGGTGCGCTACCTTACCAGAGGTTCCCCACCTCCA

LeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThr
1201 TGCTGGCGCCCATCACGGCGTACGCCAGCAGACAAGGGGCTCCTAGGGTGCATAATCA
ACGACCGCGGGTAGTGCCGCATGCGGGTCTGTCTGTTCCCGGAGGATCCACGTATTAGT

SerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGlnIleValSerThrAla
1261 CCAGCCTAACTGGCCGGGACAAAAACCAAGTGGAGGGTGAGGTCCAGATTGTGTCAACTG
GGTCGGATTGACCGGCCCTGTTTTTGGTTACCTCCCACTCCAGGTCTAACACAGTTGAC

AlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThrValTyrHisGlyAla
1321 CTGCCCAAACCTTCTGGCAACGTGCATCAATGGGGTGTGCTGGACTGTCTACCACGGGG
GACGGGTTTGGAAAGGACCGTTGCACGTAGTTACCCACACGACCTGACAGATGGTGCCCC

GlyThrArgThrIleAlaSerProLysGlyProValIleGlnMetTyrThrAsnValAsp
1381 CCGGAACGAGGACCATCGCGTACCCCAAGGGTCTGTCTATCCAGATGTATACCAATGTAG
GGCCTTGCTCCTGGTAGCGCAGTGGGTTCCAGGACAGTAGGTCTACATATGGTTACATC

GlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeuThrProCyrThrCys
1441 ACCAAGACCTTGTGGGCTGGCCCGCTCCGCAAGGTAGCCGCTCATTGACACCCTGCACTT
TGTTCTGGAACACCCGACCGGGCGAGGCGTTCCATCGGCGAGTAACTGTGGGACGTGAA

GlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIleProValArgArgArg
1501 GCGGCTCCTCGGACCTTTACCTGGTCACGAGGCACGCCGATGTCAATCCCGTGGCGCCGGC
CGCGAGGAGCCTGGAAATGGACCAAGTGTCTCCGTGCGGCTACAGTAAGGGCACGCGGCCG

GlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyrLeuLysGlySerSer
1561 GGGGTGATAGCAGGGGGCAGCCTGCTGTGCCCCGGGCCATTTCTACTTGAAAGGCTCCT
CCCCACTATCGTCCCCGTGCGACGACAGCTGGGCCGGGTAAAGGATGAACCTTCCGAGGA

GlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePheArgAlaAlaValCys
1621 CGGGGGGTCCGCTGTTGTGCCCCGCGGGGCACGCCGTGGGCATATTTAGGGCCGCGGTGT
GCCCCCAGGCGACAACACGGGGCGCCCCGTGCGGCACCCGTATAAATCCCGGCGCCACA

ThrArgGlyValAlaLysAlaValAspPheIleProValGluAsnLeuGluThrThrMet
1681 GCACCCGTGGAGTGGCTAAGGCGGTGGACTTTATCCCTGTGGAGAACCTAGAGACAACCA
CGTGGGCACCTACCGATTCCGCCACCTGAAATAGGGACACCTCTTGGATCTCTGTTGGT



FIG. 32C

ArgSerProValPheThrAspAsnSerSerProProValValProGlnSerPheGlnVal
1741 TGAGGTCCTCCCGGTTGTTACGGATAACTCCTCTCCACCAAGTAGTCCCCAGAGCTTCCAGG
ACTCCAGGGGGCCACAAGTGCCTATTGAGGAGAGGTGGTCATCACGGGGTCTCGAAGGTCC

AlaHisLeuHisAlaProThrGlySerGlyLysSerThrLysValProAlaAlaTyrAla
1801 TGGCTCACCTCCATGCTCCACAGGCAGCGGCAAAAGCACCAAGGTCCCGGCTGCATATG
ACCGAGTGGAGGTACGAGGGTGTCCGTCGCCGTTTTCTGTTCCAGGGCCGACGTATAC

AlaGlnGlyTyrLysValLeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGly
1861 CAGCTCAGGGCTATAAGGTGCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTTG
GTCGAGTCCCAGATATTCCACGATCATGAGTTGGGGAGACAACGACGTTGTGACCCGAAAC

AlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIle
1921 GTGCTTACATGTCCAAGGCTCATGGGATCGATCTAACATCAGGACCGGGGTGAGAACA
CACGAATGTACAGGTTCCGAGTACCCTAGCTAGGATTGTAGTCTGGCCCCACTCTTGT

ThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCys
1981 TTACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTTCCTTGCCGACGGCGGGT
AATGGTGACCGTGGGGTAGTGCATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCCA

SerGlyGlyAlaTyrAspIleIleIleCysAspGluCysHisSerThrAspAlaThrSer
2041 GCTCGGGGGGGCGCTTATGACATAATAATTTGTGACGAGTGCCACTCCACGGATGCCACAT
CGAGCCCCCGCGAATACTGTATTATTAACACTGCTCACGGTGAGGTGCCTACGGTGTA

IleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValVal
2101 CCATCTTGGGCATCGGCACTGTCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTG
GGTAGAACCCGTAGCCGTGACAGGAACGTTCTGCTCTGACGCCCCGCTCTGACCAAC

LeuAlaThrAlaThrProProGlySerValThrValProHisProAsnIleGluGluVal
2161 TGCTCGCCACCGCCACCCCTCCGGGCTCCGTCACTGTGCCCCATCCCAACATCGAGGAGG
ACGAGCGGTGGCGGTGGGGAGGCCGAGTGACACGGGGTAGGGTTGTAGCTCCTCC

AlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIle
2221 TTGCTCTGTCCACCACCGGAGAGATCCCTTTTACGGCAAGGCTATCCCCCTCGAAGTAA
AACGAGACAGGTGGTGGCCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATT

LysGlyGlyArgHisLeuIlePheCysHisSerLysLysLysCysAspGluLeuAlaAla
2281 TCAAGGGGGGGAGACATCTCATCTTCTGTCAATCAAAGAAGAAGTGCAGCAACTCGCCG
AGTTCCCCCTCTGTAGAGTAGAAGACAGTAAGTTTCTTCTTACGCTGCTTGAGCGGC

LysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerVal
2341 CAAAGCTGGTCGATTGGGCATCAATGCCGTGGCCTACTACCGCGGTCTTGACGTGTCCG
GTTTCGACCAGCGTAACCCGTAGTTACGGCACCAGGATGATGGCGCCAGAACTGCACAGGC

IleProThrSerGlyAspValValValAlaThrAspAlaLeuMetThrGlyTyrThr
2401 TCATCCCGACCAAGCGGCGATGTTGTCTGCTGGCAACCGATGCCCTCATGACCGGCTATA
AGTAGGGCTGGTCGCCGCTACAACAGCAGCACCCTGGCTACGGGAGTACTGGCCGATAT

GlyAspPheAspSerValIleAspCysAsnThrCysValThrGlnThrValAspPheSer
2461 CCGGCGACTTCGACTCGGTGATAGACTGCAATACGTGTGTACCCAGACAGTGCATTTCA
GGCCGCTGAAGCTGAGCCACTATCTGACGTTATGCACACAGTGGGTCTGTACGCTAAAGT

LeuAspProThrPheThrIleGluThrIleThrLeuProGlnAspAlaValSerArgThr
2521 GCCTTGACCCTACCTTACCATTTGAGACAATCACGCTCCCCAGGATGCTGTCTCCGCA
CGGAACGGGATGGAAGTGGTAACCTCTGTTAGTGCGAGGGGGTCTACGACAGAGGGCGT

GlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArgPheValAlaProGly
2581 CTCAACGTCGGGGCAGGACTGGCAGGGGGGAAGCCAGGCATCTACAGATTTGTGGCACCAG
GAGTTGACGCCCCGCTCTGACCGTCCCCCTTCGGTCCGTAGATGTCTAAACACCGTGGCC

GluArgProSerGlyMetPheAspSerSerValLeuCysGluCysTyrAspAlaGlyCys
2641 GGGAGCGCCCTCCGGCATGTTGACTCGTCCGTCCTCTGTGAGTGCTATGACGAGGCT
CCCTCGGGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGA

AlaTrpTyrGluLeuThrProAlaGluThrThrValArgLeuArgAlaTyrMetAsnThr
2701 GTGCTTGGTATGAGCTCACGCCCCGCGAGACTACAGTTAGGCTACGAGCGTACATGAACA
CACGAACCATACTCGAGTGCGGGCGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGT



FIG. 32D

ProGlyLeuProValCysGlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeu
2761 CCCCCGGGCTTCCCGTGTGCCAGGACCATCTTGAATTTTGGGAGGGCGTCTTTACAGGCC
GGGGCCCCGAAGGGCACACGGTCTGTTAGAACTTAAACCCTCCCGCAGAAATGTCCGG

ThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyr
2821 TCACATATAGATGCCCACTTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTTCCTT
AGTGAATATATCTACGGGTGAAAGATAGGGTCTGTTTCTGTCTACCCCTCTTGGAAAGGAA

LeuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaProProProSerTrpAsp
2881 ACCTGGTAGCGTACCAAGCCACCGTGTGCGCTAGGGCTCAAGCCCCTCCCCATCGTGGG
TGGACCATCGCATGGTTCGGTGGCACACGCGATCCCGAGTTCGGGGAGGGGTAGCACCC

GlnMetTrpLysCysLeuIleArgLeuLysProThrLeuHisGlyProThrProLeuLeu
2941 ACCAGATGTGGAAGTGTGATTGCGCTCAAGCCCACCTCCATGGGCCAACACCCCTGC
TGCTACACCTTACAAACTAAGCGGAGTTCGGGTGGGAGGTACCCGGTGTGGGGACG

TyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisProValThrLysTyrIle
3001 TATACAGACTGGGCGCTGTTGAGAATGAAATCACCTGACGCACCCAGTCACCAAATACA
ATATGTCTGACCCGCGACAAGTCTTACTTTAGTGGGACTGCGTGGGTCACTGGTTTATGT

MetThrCysMetSerAlaAspLeuGluValValThrSerThrTrpValLeuValGlyGly
3061 TCATGACATGCATGTGCGCCGACCTGGAGGTGCTCACGAGCACCTGGGTGCTCGTTGGCG
AGTACTGTACGTACAGCCGGCTGGACCTCCAGCAGTGTCTGTGGACCCACGAGCAACCGC

ValLeuAlaAlaLeuAlaAlaTyrCysLeuSerThrGlyCysValValIleValGlyArg
3121 GCGTCTGGCTGCTTTGGCCGCGTATTGCTGTCAACAGGCTGCGTGGTCACTAGTGGGCA
CGCAGGACCGACGAAACCGGCGCATAACGGACAGTTGTCCGACGCACCACTATACCCGT

ValValLeuSerGlyLysProAlaIleIleProAspArgGluValLeuTyrArgGluPhe
3181 GGGTCTGCTTGTCCGGGAAGCCGCAATCATACCTGACAGGGAAGTCTCTACCGAGAGT
CCCAGCAGAACAGGCCCTTCGGCCGTTAGTATGGACTGTCCCTTCAGGAGATGGCTCTCA

AspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAla
3241 TCGATGAGATGGAAGAGTGTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCG
AGCTACTCTACCTTCTCACGAGAGTGTGAATGGCATGTAGCTCGTTCCCTACTACGAGC

GluGlnPheLysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluVal
3301 CCGAGCAGTTCAAGCAGAAAGGCCCTCGGCTCTGCAGACCGCGTCCCGTCAGGCAAGG
GGCTCGTCAAGTTCGTCTTCCGGGAGCCGAGGACGTCTGGCGCAGGGCAGTCCGTCTCC

IleAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMet
3361 TTATCGCCCCGTGTGTCCAGACCACTGGCAAAACTCGAGACCTTCTGGGCGAAGCATA
AATAGCGGGGACGACAGGTCTGGTTGACCGTTTTTGTAGCTCTGGAAGACCCGCTTCGTAT

TrpAsnPheIleSerGlyIleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnPro
3421 TGTGGAATTCATCAGTGGGATACAATACTTGGCGGGCTTGTCAACGCTGCTGGAAC
ACACCTTGAAGTAGTCACCCATGTTATGAACCGCCGAACAGTTGCGACGGACATTGG

AlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGln
3481 CCGCCATTGCTTCATTGATGGCTTTTACAGCTGCTGTACCAAGCCCACTAACCCTAGCC
GGCGGTAACGAAGTAACCTACCGAAAATGTGACGACAGTGGTGGGTGATTGGTGATCGG

ThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAla
3541 AAACCCTCCTCTTCAACATATTGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCCCGGTG
TTTGGGAGGAGAAGTTGTATAACCCCCCAACACCGACGGGTGAGCGGGCGGGGGCCAC

AlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGly
3601 CCGCTACTGCCCTTTGTGGGCGCTGGCTTAGCTGGCGCCGCACTCGGCACTGTTGGACTGG
GGCGATGACGGAAACACCCGCGACCGAATCGACCGCGGCGGTAGCCGTACAACCTGACC

LysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAla
3661 GGAAGGTCTCATAGACATCCTTGCAGGGTATGGCGCGGGCGTGGCGGGAGCTCTTGTGG
CCTTCCAGGAGTATCTGTAGGAACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACC

PheLysIleMetSerGlyGluValProSerThrGluAspLeuValAsnLeuLeuProAla
3721 CATTCAAGATCATGAGCGGTGAGGTCCCCTCCACGGAGGACCTGGTCAATCTACTGCCCG
GTAAGTTCTAGTACTCGCCACTCCAGGGGAGGTGCTCTGGACAGTTAGATGACGGGC



FIG. 32E

IleLeuSerProGlyAlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHis
3781 CCATCCTCTCGCCCGAGCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGC
GGTAGGAGAGCGGGCTCGGGAGCATCAGCCGCACAGACACGTCGTTATGACGCGGGCCG

ValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArg
3841 ACGTTGGCCCGGGCGAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCTCC
TGCAACCGGGCCGCTCCCCGTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGG

GlyAsnHisValSerProThrHisTyrValProGluSerAspAlaAlaAlaArgValThr
3901 GGGGGAACCATGTTTCCCCCAGCAGTACGTGCCGGAGAGCGATGCAGCTGCCGCGTCA
CCCCCTTGGTACAAAGGGGGTGCCTGATGCACGGCCTCTCGCTACGTGCAGGGGCGCAGT

AlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSer
3961 CTGCCATACTCAGCAGCCTCACTGTAACCCAGCTCCTGAGGCGACTGCACCACTGGATAA
GACGGTATGAGTCGTCGGAAGTACATTGGGTGAGGACTCCGCTGACGTGGTCACCTATT

SerGluCysThrThrProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCys
4021 GCTCGGAGTGTACCACTCCATGCTCCGGTTCCTGGCTAAGGGACATCTGGGACTGGATAT
CGAGCCTCACATGGTGAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCTGACCTATA

GluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGly
4081 GCGAGGTGTTGAGCGACTTTAAGACCTGGCTAAAGCTAAGCTCATGCCACAGCTGCCTG
CGCTCCACAACCTCGTGAAATTCTGGACCGATTTTCGATTGAGTACGGTGTGACGGAC

IleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMet
4141 GGATCCCTTTGTGTCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGTGGACGGCATCA
CCTAGGGGAAACACAGGACGGTGCGCCCATATTCCCCAGACCGCTCACCTGCCGTAGT

HisThrArgCysHisCysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArg
4201 TGCACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGA
ACGTGTGAGCGACGGTGACACCTCGACTCTAGTGACCTGTACAGTTTTTGCCCTGCTACT

IleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyr
4261 GGATCGTCGGTCTTAGGACCTGCAGGAACATGTGGAGTGGGACCTTCCCCATTAATGCCT
CCTAGCAGCCAGGATCCTGGACGTCTTGTACACCTCACCCTGGAAGGGGTAAATTACGGA

ThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgVal
4321 ACACCAGGGGCCCTGTACCCCTTCTCGCCGAACCTACAGTTTCGCGCTATGGAGGG
TGTGGTGCCCGGGGACATGGGGGGAAGGACGCGGCTTGATGTGCAAGCGGATACCTCCC

SerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMet
4381 TGTCTGCAGAGGAATATGTGGAGATAAGGCAAGTGGGGGACTTCCACTACGTGACGGGTA
ACAGACGTCTCCTTATACACCTCTATTCCGTCCACCCCTGAAGGTGATGCACTGCCCCAT

ThrThrAspAsnLeuLysCysProCysGlnValProSerProGluPhePheThrGluLeu
4441 TGACTACTGACAATCTCAAATGCCCGTGCCAGGTCCCATCGCCCGAATTTTTCACAGAAT
ACTGATGACTGTTAGAGTTTACGGGCACGGTCCAGGGTAGCGGGCTTAAAAAGTGTCTTA

AspGlyValArgLeuHisArgPheAlaProProCysLysProLeuLeuArgGluGluVal
4501 TGGACGGGGTGCGCTACATAGGTTTGCGCCCCCTGCAAGCCCTTGCTGCGGGAGGAGG
ACCTGCCCCACGCGGATGTATCCAAACGCGGGGGGACGTTGCGGAACGACGCCCTCCTCC

SerPheArgValGlyLeuHisGluTyrProValGlySerGlnLeuProCysGluProGlu
4561 TATCATTAGAGTAGGACTCCACGAATACCCGGTAGGGTCGCAATTACCTTGCAGAGCCG
ATAGTAAGTCTCATCTGAGGTGCTTATGGGCCATCCAGCGTTAATGGAACGCTCGGGC

ProAspValAlaValLeuThrSerMetLeuThrAspProSerHisIleThrAlaGluAla
4621 AACCGGACGTGGCCGTGTTGACGTCCATGCTCACTGATCCCTCCCATATAACAGCAGAGG
TTGGCTGCACCGGCACAACTGCAGGTACGAGTGACTAGGGAGGGTATATTGTCGTCTCC

AlaGlyArgArgLeuAlaArgGlySerProProSerValAlaSerSerSerAlaSerGln
4681 CGGCCGGGCGAAGGTTGGCGAGGGGATCACCCCTCTGTGGCCAGCTCCTCGGCTAGCC
GCCGGCCCGCTTCAACCGCTCCCTAGTGGGGGGAGACACCGGTCGAGGAGCCGATCGG

LeuSerAlaProSerLeuLysAlaThrCysThrAlaAsnHisAspSerProAspAlaGlu
4741 AGCTATCCGCTCCATCTCTCAAGGCAACTGCACCGCTAACCATGACTCCCCTGATGCTG
TCGATAGGCGAGGTAGAGAGTTCCGTTGAACGTGGCGATTGGTACTGAGGGGACTACGAC



FIG. 32F

LeuIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlyAsnIleThrArgValGlu
4801 AGTCATAGAGGCCAACCTCCTATGGAGGCAGGAGATGGGCGGCAACATCACCAGGGTTG
TCAGTATCTCCGGTTGGAGGATACCTCCGTCTCTACCCGCCGTTGTAGTGGTCCCAAC

SerGluAsnLysValValIleLeuAspSerPheAspProLeuValAlaGluGluAspGlu
4861 AGTCAGAAAACAAAGTGGTGATTCTGGACTCCTTCGATCCGCTTGTGGCGGAGGAGGACG
TCAGTCTTTTGTTCACCACTAAGACCTGAGGAAGCTAGGCGAACACCGCTCCTCCTGC

ArgGluIleSerValProAlaGluIleLeuArgLysSerArgArgPheAlaGlnAlaLeu
4921 AGCGGGAGATCTCCGTACCCGCAGAAATCCTGCGGAAGTCTCGGAGATTGCCCCAGGCC
TCGCCCTCTAGAGGCATGGGCGTCTTTAGGACGCCTTCAGAGCCTCTAAGCGGGTCCGGG

ProValTrpAlaArgProAspTyrAsnProProLeuValGluThrTrpLysLysProAsp
4981 TGCCCGTTTGGGCGCGGCGGACTATAACCCCGCTAGTGGAGACGTGGAAAAAGCCCG
ACGGGCAACCCGCGCGGCGCTGATATTGGGGGGCGATCACCTCTGCACCTTTTTCGGGC

TyrGluProProValValHisGlyCysProLeuProProProLysSerProProValPro
5041 ACTACGAACCACCTGTGGTCCATGGCTGTCCGCTTCCACCTCCAAAGTCCCTCCTGTGC
TGATGCTTGGTGGACACCAAGTACCAGACAGGCGAAGGTGGAGGTTTCAGGGGAGGACACG

ProProArgLysLysArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAla
5101 CTCCGCTCGGAAGAAGCGGACGGTGGTCTCACTGAATCAACCTATCTACTGCCTTGG
GAGGCGGAGCCTTCTTCGCTGCCACCAAGGTGACTTAGTTGGGATAGATGACGGAACC

GluLeuAlaThrArgSerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThr
5161 CCGAGCTCGCCACCAGAAGCTTTGGCAGCTCCTCAACTTCGGCATTACGGGCGACAATA
GGCTCGAGCGGTGGTCTTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCCGCTGTTAT

ThrThrSerSerGluProAlaProSerGlyCysProProAspSerAspAlaGluSerTyr
5221 CGACAACATCCTCTGAGCCCGCCCTTCTGGCTGCCCGCCGACTCCGACGCTGAGTCCT
GCTGTTGTAGGAGACTCGGGCGGGGAAGACCGACGGGGGGGCTGAGGCTGCGACTCAGGA

SerSerMetProProLeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrp
5281 ATTCCTCCATGCCCCCTGGAGGGGGAGCCTGGGGATCCGGATCTTAGCGACGGGTGCTAT
TAAGGAGGTACGGGGGGGACCTCCCCCTCGAACCCCTAGGCCTAGAATCGCTGCCAGTA

SerThrValSerSerGluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSer
5341 GGTCAACGGTCAGTAGTGAGGCCAACGCGGAGGATGTCGTGTGCTGCTCAATGTCTTACT
CCAGTTGCCAGTCATCACTCCGGTTGCGCTCTACAGCACACGACGAGTTACAGAATGA

TrpThrGlyAlaLeuValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAla
5401 CTTGGACAGGCGCACTCGTCACCCCGTGCGCCGCGGAAGAACAGAACTGCCCATCAATG
GAACCTGTCCGCGTGAGCAGTGGGGCACGCGGCGCCTTCTTGTCTTTGACGGGTAGTTAC

LeuSerAsnSerLeuLeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAla
5461 CACTAAGCAACTCGTTGCTACGTACCCACAATTTGGTGTATTCCACCACCTCAGCGAGTG
GTGATTGTTGAGCAACGATGCAGTGGTGTAAACCACATAAGGTGGTGGAGTGCGTCAC

CysGlnArgGlnLysLysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGln
5521 CTTGCCAAAGGCAGAGAAAGTCAATTTGACAGACTGCAAGTTCTGGACAGCCATTACC
GAACGGTTTCCGTCTTCTTTCAGTGTAACTGTCTGACGTTCAAGACCTGTCCGTAATGG

AspValLeuLysGluValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerVal
5581 AGGACGTACTCAAGGAGGTTAAAGCAGCGGCGTCAAAAGTGAAGGCTAACTTGCTATCCG
TCCTGCATGAGTTCTCCAATTTGTCGCCGAGTTTTCACTTCCGATTGAACGATAGGC

GluGluAlaCysSerLeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAla
5641 TAGAGGAAGCTTGCAGCCTGACGCCCCACACTCAGCCAAATCCAAGTTTGGTTATGGGG
ATCTCCTTCGAACGTCGAGTGCGGGGGTGTGAGTCGGTTTAGGTTCAAACCAATACCCC

LysAspValArgCysHisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAsp
5701 CAAAAGACGTCCGTTGCCATGCCAGAAAGGCCGTAACCCACATCAACTCCGTGTGGAAAG
GTTTTCTGCAGGCAACGGTACGGTCTTTCCGGCATTGGGTGTAGTTGAGGCACACCTTTC

LeuLeuGluAspAsnValThrProIleAspThrThrIleMetAlaLysAsnGluValPhe
5761 ACCTTCTGGAAGACAATGTAAACCAATAGACACTACCATCATGGCTAAGAACGAGGTTT
TGGAAGACCTTCTGTTACATTGTGGTTATCTGTGATGGTAGTACCGATTCTTGCTCCAAA



FIG. 32G

CysValGlnProGluLysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeu
5821 TCTGCGTTTCAGCCTGAGAAAGGGGGGTCGTAAGCCAGCTCGTCTCATCGTGTTCCTCCCGATC
AGACGCAAGTCGGACTCTTCCCCCAGCATTGGTCGAGCAGAGTAGCACAAGGGGGCTAG

GlyValArgValCysGluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAla
5881 TGGGCGTGCGCGTGTGCGAAAGATGGCTTTGTACGACGTGGTTACAAAGCTCCCCTTGG
ACCCGACGCGCACACGCTTTTCTACCGAAACATGCTGCACCAATGTTTCGAGGGGAACC

ValMetGlySerSerTyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuVal
5941 CCGTGATGGGAAGCTCCTACGGATTCCAATACTCACCAGGACAGCGGGTTGAATTCCTCG
GGCACTACCCCTTCGAGGATGCCAAGGTTATGAGTGGTCTGTGCCCCAACTTAAGGAGC

GlnAlaTrpLysSerLysLysThrProMetGlyPheSerTyrAspThrArgCysPheAsp
6001 TGCAAGCGTGGAAAGTCCAAGAAAACCCCAATGGGGTTCTCGTATGATACCCGCTGCTTTG
ACGTTTCGCACCTTCAGGTTCTTTTGGGGTTACCCCAAGAGCATACTATGGGCGACGAAAC

SerThrValThrGluSerAspIleArgThrGluGluAlaIleTyrGlnCysCysAspLeu
6061 ACTCCACAGTCACTGAGAGCGACATCCGTACGGAGGAGGCAATCTACCAATGTTGTGACC
TGAGGTGTCACTGACTCTCGTGTAGGCATGCCTCCTCCGTTAGATGGTTACAACACTGG

AspProGlnAlaArgValAlaIleLysSerLueThrGluArgLeuTyrValGlyGlyPro
6121 TCGACCCCCAAGCCCGCGTGGCCATCAAGTCCCTCACCAGAGAGGCTTTATGTTGGGGGGC
AGCTGGGGGTTCCGGGCGACCCGGTAGTTCAGGGAGTGGCTCTCCGAAATACAACCCCGG

LeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeu
6181 CTCTTACCAATTCAAGGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGCAGCGGGCTAC
GAGAATGGTTAAGTTCCTCTTACGCGGATAGCGTCCACGGCGCGCTCGCCGCATG

ThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAla
6241 TGACAACTAGCTGTGGTAACACCCTCACTTGCTACATCAAGGCCCGGGCAGCCTGTGAG
ACTGTTGATCGACACCATTTGTGGGAGTGAACGATGTAGTTCGGGGCCCGTGGACAGCTC

AlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeuValValIleCysGlu
6301 CCGCAGGGGCTCCAGGACTGCACCATGCTCGTGTGTGGCGACGACTTAGTCTGTTATCTGTG
GGCGTCCCGAGGTCTGACGTGGTACGAGCACACCCGCTGCTGAATCAGCAATAGACAC

SerAlaGlyValGlnGluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArg
6361 AAAGCGCGGGGGTCCAGGAGGACGCGGCGAGCCTGAGAGCCTTCACGGAGGCTATGACCA
TTTCGCGCCCCAGGTCCTCCTGCGCCGCTCGGACTCTCGGAAGTGCCTCCGATACTGGT

TyrSerAlaProProGlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSer
6421 GGTACTCCGCCCCCTGGGGACCCCAACAGAAATACGACTTGGAGCTCATAACAT
CCATGAGGCGGGGGGACCCCTGGGGGGTGTGGTCTTATGCTGAACCTCGAGTATTGTA

CysSerSerAsnValSerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThr
6481 CATGCTCCTCCAACGTGTCACTCGCCACGACGGCGCTGGAAAGAGGGTCTACTACCTCA
GTACGAGGAGGTTGCACAGTCAGCGGGTGTGCCGCGACCTTTCTCCAGATGATGGAGT

ArgAspProThrThrProLeuAlaArgAlaAlaTrpGluThrAlaArgHisThrProVal
6541 CCCGTGACCCTACAACCCCCCTCGCGAGAGCTGCGTGGGAGACAGCAAGACACACTCCAG
GGGCACTGGGATGTTGGGGGAGCGCTCTCGACGCACCCTCTGTCTGTTCTGTGTGAGGTC

AsnSerTrpLeuGlyAsnIleIleMetPheAlaProThrLeuTrpAlaArgMetIleLeu
6601 TCAATTCCTGGCTAGGCAACATAATCATGTTTCCCCCACACTGTGGGCGAGGATGATAC
AGTTAAGGACCGATCCGTTGTATTAGTACAAACGGGGGTGTGACACCCGCTCTACTATG

MetThrHisPhePheSerValLeuIleAlaArgAspGlnLeuGluGlnAlaLeuAspCys
6661 TGATGACCAATTTCTTTAGCGTCTTATAGCCAGGGACAGCTTGAACAGGCCCTCGATT
ACTACTGGGTAAAGAAATCGCAGGAATATCGGTCCCTGGTCGAACTTGTCCGGGAGCTAA

GluIleTyrGlyAlaCysTyrSerIleGluProLeuAspLeuProProIleIleGlnArg
6721 GCGAGATCTACGGGGCTGCTACTCCATAGAACCATTGATCTACCTCCAATCATTCAA
CGCTCTAGATGCCCCGGACGATGAGGTATCTTGGTGAAC TAGATGGAGGTTAGTAAGTTT

Leu
6781 GACTC
CTGAG



FIG. 33

Lane Number	Chimp Reference Number	Infection Type	Sample date (days) (0=inoculation day)	ALT (alanine) aminotransferase level in sera (μU/ml)
1	1	NANB	0	0
2	1	NANB	76	71
3	1	NANB	118	19
4	1	NANB	154	N/A
5	2	NANB	0	0
6	2	NANB	21	52
7	2	NANB	73	13
8	2	NANB	138	N/A
9	3	NANB	0	8
10	3	NANB	43	205
11	3	NANB	53	14
12	3	NANB	159	6
13	4	NANB	-3	11
14	4	NANB	55	132
15	4	NANB	83	N/A
16	4	NANB	140	N/A
17	5	HAV	0	4
18	5	HAV	25	147
19	5	HAV	40	18
20	5	HAV	268	5
21	6	HAV	-8	N/A
22	6	HAV	15	100
23	6	HAV	41	10
24	6	HAV	129	N/A
26	7	HAV	0	7
27	7	HAV	22	83
28	7	HAV	115	5
29	7	HAV	139	N/A
30	8	HAV	0	15
31	8	HAV	26	130
32	8	HAV	74	8
33	8	HAV	205	5
34	9	HBV	-290	N/A
35	9	HBV	379	9
36	9	HBV	435	6
37	10	HBV	0	8
38	10	HBV	111-118 (pool)	96-156 (pool)
39	10	HBV	205	9
40	10	HBV	240	13
41	11	HBV	0	11
42	11	HBV	28-56 (pool)	8-100 (pool)
43	11	HBV	169	9
44	11	HBV	223	10

FIG. 33A

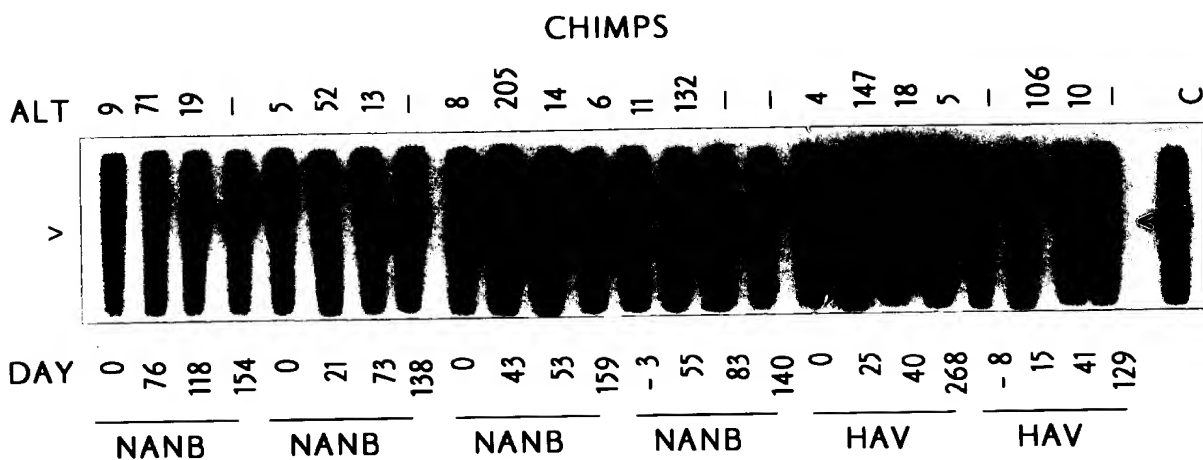


FIG. 33B

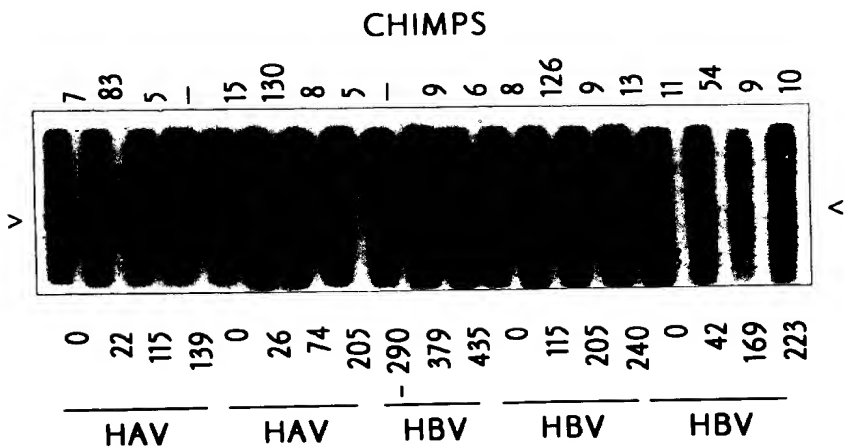


FIG. 34

Lane Number	Patient Reference Number	Diagnosis	ALT Level (mu/ml)
1	11	NANB	1354
2	11	NANB	31
3	21	NANB	14
4	21	NANB	79
5	21	NANB	26
6	31	NANB	78
7	31	NANB	87
8	31	NANB	25
9	41	NANB	60
10	41	NANB	13
11	51	NANB	298
12	51	NANB	101
13	61	NANB	474
14	61	NANB	318
15	71	NANB	20
16	71	NANB	163
17	81	NANB	44
18	81	NANB	50
19	9	NANB	N/A
20	10	NANB	N/A
21	11	NANB	N/A
22	12	Normal	N/A
23	13	Normal	N/A
24	14	Normal	N/A
26	30174	Normal	N/A
27	30105	Normal	N/A
28	30072	Normal	N/A
29	30026	Normal	N/A
30	30146	Normal	N/A
31	30250	Normal	N/A
32	30071	Normal	N/A
33	15	AcuteHAV	N/A
34	16	AcuteHAV	N/A
35	17	AcuteHAV	N/A
36	18	AcuteHAV	N/A
37	48088	AcuteHAV	N/A
38	47288	AcuteHAV	N/A
39	47050	AcuteHAV	N/A
40	46997	AcuteHAV	N/A
41	19	Convalescent HBV	N/A
42	20	(anti-HBSag+ve;	N/A
43	21	anti-HBCag+ve)	N/A
44	22	(anti-HBSag+ve;	N/A
45	23	anti-HBCag+ve)	N/A
46	24	(anti-HBSag+ve;	N/A
47	25	anti-HBCag+ve)	N/A
48	26	(anti-HBSag+ve;	N/A
49	27	anti-HBSag+ve)	N/A

¹Sequential serum samples were assayed from these patients

FIG. 34A

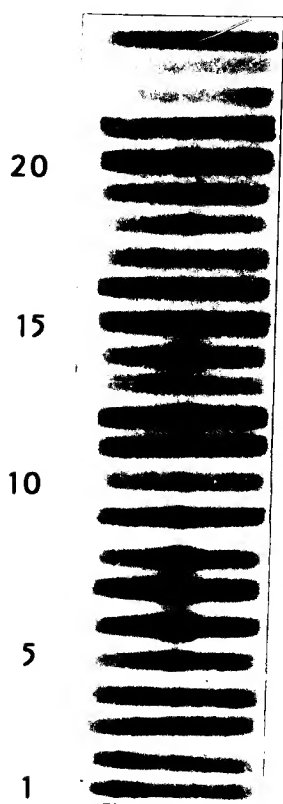


FIG. 34B

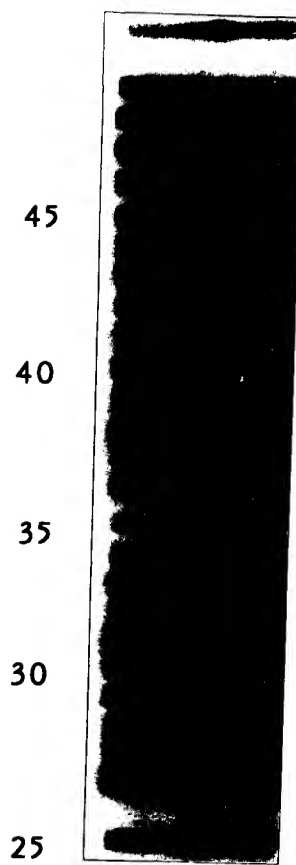




FIG. 35

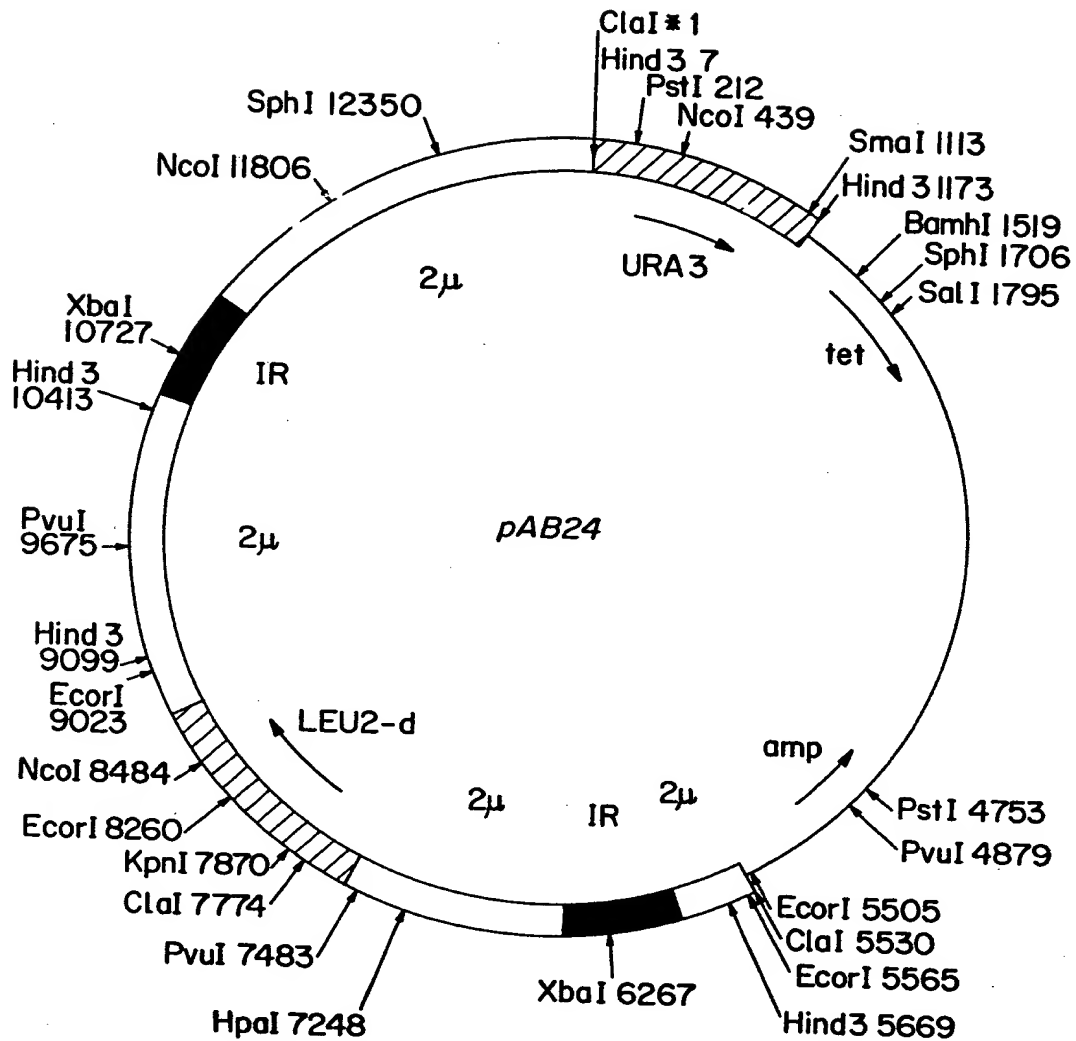


FIG. 37A



FIG. 37B

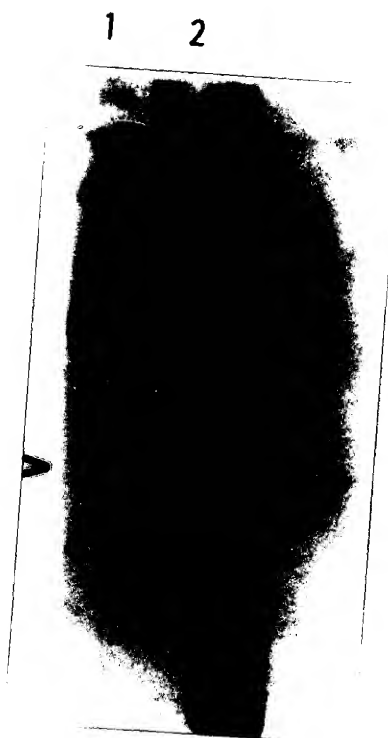




FIG. 42A

HCV	EYVLLFLLLADARVCSCLWMMLLISQAEAALENLVILNAAFLAGTHGLVSFLVFFCFA
MNWVD1	AVSFVTLITGNMSFRDLGRVMVMVGATMTDDIGMGVTYLALLAAFKVRPTFAAGLLLRKL
	10 20 30 40 50 130 140 150 160 170 180
HCV	WYLGKWVPGAVYTFYGMWPLLLLLLALPQRAYALDTEVAASCGGVVLVGLMALTLSPYY
MNWVD1	TSKELMMTTIGIVLLSQSTIPETILELTDALALGMMVLKMRKMEKYQLAVTIMAILCVP
	60 70 80 90 100 110 190 200 210 220 230 240
HCV	KRYISWCLWLQYFLTRVEAQLHVWIPPLNVRGGRDAVILLMCAVHPTLVFDITKLLAV
MNWVD1	NAVILQNAWKVSCTILAVSVSPFLTSSQKADWIPALTIKGLNPTAIF-LTTLSTRN
	120 130 140 150 160 170 250 260 270 280 290
HCV	FGPLWILQASLLKVPYF-VRVQGLLRFCALARKMIGGHYVQMVIKLGALTGTYYVNH
MNWVD1	KKRSWPLNEAIAVGMVSIASSLLKNDIPMTGPLVAGGLTVCYV-LTGRSADLELEA
	180 190 200 210 220 230 300 310 320 330 340 350
HCV	TPLRDWAHNGLRDLAVAVEPVVFSQMETKLITWGADTAACGDIINGLPVSARRGREILLG
MNWVD1	ADV-K-WEDQAEISGSSPILSITISE-DGSMISIKNEEEETLTILIRTGLLVISG---LFP
	240 250 260 270 280 290 360 370 380 390 400 410
HCV	PADGMVSKGWRLAPITAYAQTRGLLGCIITSLTGRDKNQVEGEVQIVSTAAQTFLATC
MNWVD1	VSIPIIAAAWYLWEVKKQRAVGLWDVPSPPPVGKAELEDGAYRIKQKGLGYSQIGAGVY
	300 310 320 330 340 350 420 430 440 450 460 470
HCV	INGVCWTVYHGAGTRTIA SPKGPVIQMYTNVDQDLV----GWPAPQGSRLTPCTCGSSD
MNWVD1	KEGTFTMWHVTRGAVLMHKGKRIEPSWADVKKDLVSCGGGWKLEGEWKEGEEVQVLALE
	360 370 380 390 400 410 480 490 500 510 520 530
HCV	LYLVTRHADVIPVRRRGDSRGSLLSPRPISYLGSSGGPLCPAGHAVGIFRAAVCTRGV
MNWVD1	PGKNPRAVQTKPGLFKTN--AGTIGAVSLDFSPGTSGSPIIDKKGKVVGLYGNGVVTRSG
	420 430 440 450 460 470 540 550 560 570 580 590



FIG. 43

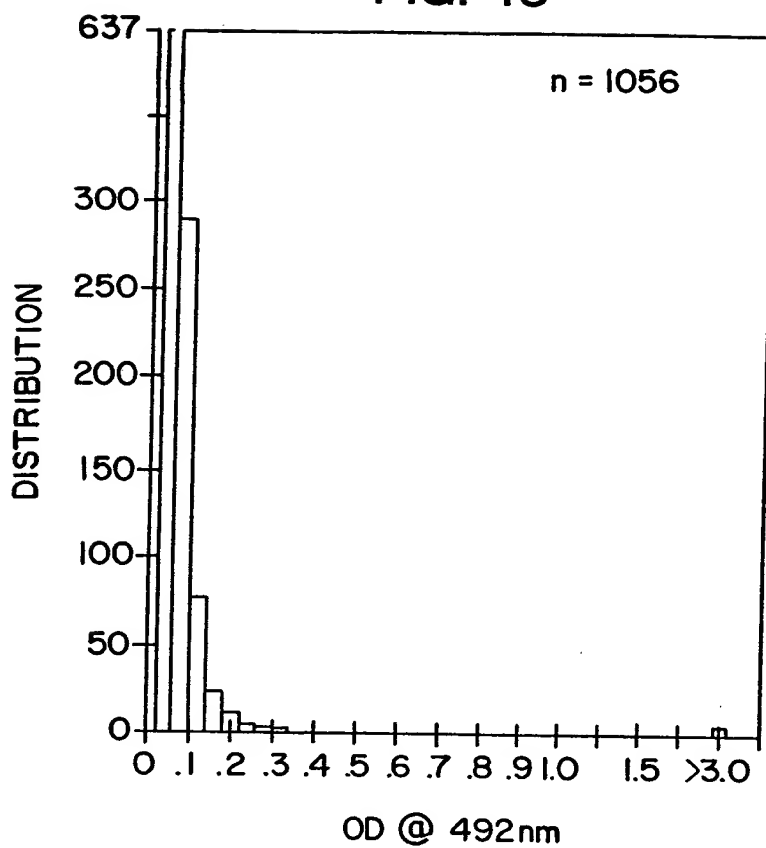


FIG. 44

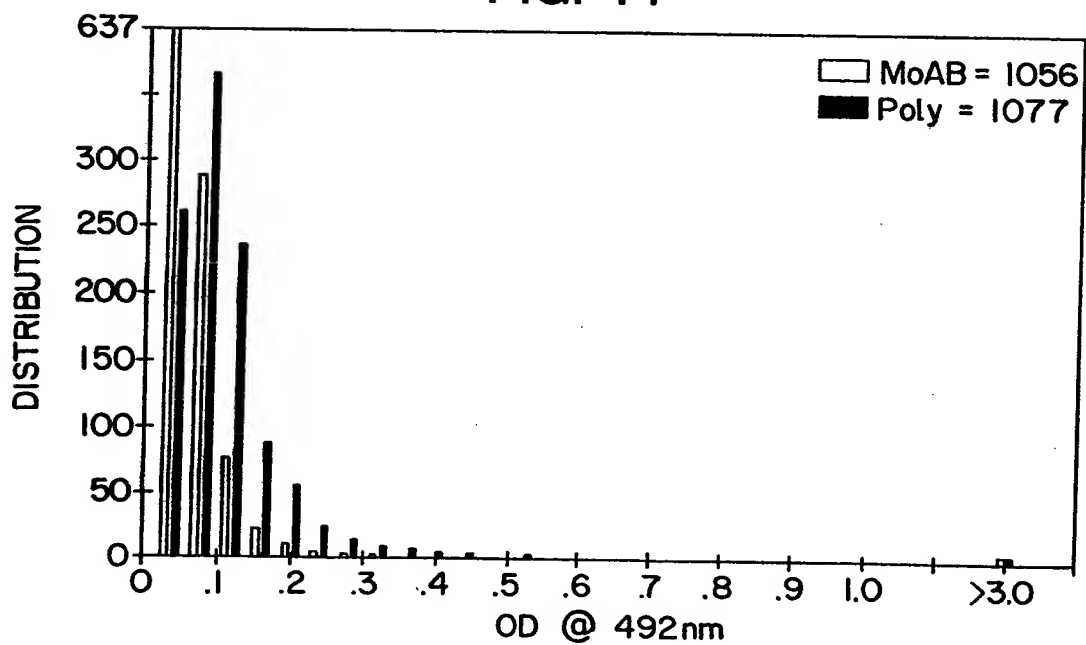




FIG. 45

<u>Name</u>	<u>Common Sequence</u>	<u>Variable Sequence</u>
5'-3-1	AAGCTTGATCGAATTC	CGATCTTGC
-2		CGATCCTGC
-3		CGATCATGC
-4		CGATCGTGC
-5		CGAAGTTGC
-6		CGAAGCTGC
-7		AGATCTTGC
-8		AGATCCTGC
-9		AGATCATGC
-10		AGATCGTGC
-11		AGAAGTTGC
-12		AGAAGCTGC
-13		CGATCTTGT
-14		CGATCCTGT
-15		CGATCATGT
-16		CGATCGTGT
-17		CGAAGTTGT
-18		CGAAGCTGT
-19		AGATCTTGT
-20		AGATCCTGT
-21		AGATCATGT
-22		AGATCGTGT
-23		AGAAGTTGT
-24		AGAAGCTGT
-25		CGCTCTTGC
-26		CGCTCCTGC
-27		CGCTCATGC
-28		CGCTCGTGC
-29		CGCAGTTGC
-30		CGCAGCTGC
-31		CGCTCTTGT
-32		CGCTCCTGT
-33		CGCTCATGT
-34		CGCTCGTGT
-35		CGCAGTTGT
-36		CGCAGCTGT



FIG. 46A

GlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGly
1 CAGGCTGCTCCTGAGAGGCTAGCCAGCTGCCGACCCCTTACCATTGACCCAGGGCTGGG
GTCCGACAGGACTCTCCGATCGGTGACGGCTGGGAATGGCTAAACTGGTCCCGACCC

ProIleSerTyrAlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrPro
61 GCCCTATCAGTTATGCCAACGGAAGCGGCCCGACAGCGCCCTACTGCTGGCACTACC
CGGGATAGTCAATACGGTTGCCCTTCGCCGGGGCTGGTCGCGGGGATGACGACCGTGATGG

ProLysProCysGlyIleValProAlaLysSerValCysGlyProValTyrCysPheThr
121 CCCCAAAACCTTGGGTATTGTGCCCGCGAAGAGTGTGTGTCGGTATATTGCTTCA
GGGGTTTGGAAACGCCATAACACGGGGCGCTTCTCACACACACACCGGCCATATAACGAAGT

ProSerProValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGly
181 CTCCCAGCCCCGTGGTGGTGGAAACGACCGACAGGTCCGGCGGCCACCTACAGCTGGG
GAGGTCGGGGCACCAACCCTTGCTGGCTGTCCAGCCCCGCGGGTGGATGTCGACCC

GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
241 GTGAAATGATACGGACGTCTTCGTCCCTTAACAATACCAGGCCACCGCTGGCAATTGGT
CACTTTTACTATGCCTGCAGAAGCAGGAATTGTTATGTCGGTGGCGACCCGTTAACCA

GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
301 TCGGTTGTACCTGGATGAACCTCAACTGGATTCAACAAAGTGTGCGGAGCGCCTCCTTGTG
AGCCAACATGGACCTACTTGAGTTGACCTAAGTGGTTTCACACGCGCCTCGCGGGAGGAACAC



FIG. 46B

IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisPro
361 TCATCGAGGGCGGCAACAACACCTGCACTGCCCACTGATGCTTCCGCAAGCATC
AGTAGCCTCCCCGCGCTTGTGTGGACGTGACGGGTGACTAACGAAGCGTTCCGTAG

AspAlaThrTyrSerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAsp
421 CGGACGCCACATACTCTCGGTGCGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTCG
GCC TGGCGGTATGAGAGCCACGCCGAGGCCAGGACCTAGTGTGGTCCACGGACCAGC

TyrProTyrArgLeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArg
481 ACTACCCGTATAGGCTTTGGCATTATCTCTGTACCATCAACTCACTATATTAAATCA
TGATGGGCATATCCGAAACCGTAATAGGAACATGGTAGTTGATGATATAAATTTTAGT

MetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
541 GGATGTACGTGGAGGGGTGAGCACAGGCTGGAAGCTGCCCTGCAACTGGACCGGGCG
CCTACATGCACCCCTCCCCAGCTCGTGTCCGACCTTCGACGGACGTTGACCTGCGCCCCGC

ArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeuLeuThrThrThr
601 AACGTTGCGATCTGGAAGATAGGACAGGTCCGAGCTCAGCCCGTTACTGCTGACCACTA
TTGCAACGCTAGACCTTCTATCCCTGTCCAGGCTCGAGTCGGGCAATGACGACTGGTGAT

GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIle
661 CACAGTGGCAGTCTCCCGTGTCTCTTCAACCCCTGCCAGCCTGTCTCCACCGCCTCA
GTGTCACCGTCCAGGAGGCACAAAGGAAGTGTGGACGCTCGGAACAGGTGGCCGGAGT



FIG. 46C

-----Overlap with Combined ORF of DNAs 12f through 15e-----
HisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAla
721 TCCACCTCCACCAGAACATTGTGGACGTGCAGTACTTGTACGGGTGGGTCAAGCATCG
AGGTGGAGGTGGTCTTGTAACACCTGCACGTGCATGAACATGCCCCACCCAGTTCGTAGC

SerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeuAlaAspAlaArg
781 CGTCCTGGCCATTAAAGTGGAGTACGTGTCCTCCTCTTCTTCTGCTGCAGACGCGC
GCAGGACCCGGTAATTCAACCTCATGCAGCAGGAGACAAAGGAAGACGAACGTCTGCGCG

ValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaLeuGluAsn
841 GCGTCTGCTCCTGCTTGTGGATGATGCTACTCATATCCCAAGCGGAAGCGCTTTGGAGA
CGCAGACGAGGACGAACACCTACTACTAGTATAGGTTCGCCCTTCGCCGAAACCTCT

LeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuVal
901 ACCTCGTAATACTTAATGCAGCATCCCTGGCCGGACGCACGGTCTTGATCCTTCCTCG
TGGAGCATTATGAATTACGTCGTAGGACCGGCCCTGCGTCCAGAACATAGGAAGGAGC

PhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPhe
961 TGTTCCTTCTGCTTGCATGGTATCTGAAGGTAAGTGGTGTCCCGGAGCGGTCTACACCT
ACAAGAAGACGAAACGTACCATAGACTTCCCATTCAACCCACGGGCTCGCCAGATGTGGA



FIG. 47A

1 GlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGly
CAGGCTGTCTCTGAGAGGCTAGCCAGCTGCCGACCCCTTACCGATTTTGACCAGGGCTGGG
GTCCGACAGGACTCTCCGATCGGTGACGGCTGGGGAATGGCTAAACTGGTCCCAGACC

61 ProIleSerTyrAlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrPro
GCCCTATCAGTTATGCCAACGGAAGCGGCCCGACAGCGCCCTACTGCTGGCACTACC
CGGGATAGTCAATACGGTTGCCTTCGCCGGGGCTGGTCGCGGGGATGACGACCGTGATGG

121 ProLysProCysGlyIleValProAlaLysSerValCysGlyProValTyrCysPheThr
CCCCAAACCTTGCGGTATTGTGCCCGCGAAGAGTGTGTGGTCCGGTATATTGCTTCA
GGGGTTTTGGAACGCCATAACACGGGCGCTTCTCACACACACAGGCCATATAACGAAGT

181 ProSerProValValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGly
CTCCAGCCCCGTGGTGGTGGGAACGACCGACAGGTGCGGCGCGCCACCTACAGCTGGG
GAGGGTCGGGGCACCACCACCTTGCTGGCTGTCCAGCCCGCGCGGGTGGATGTCGACCC

241 GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
GTGAAATGATACGGACGTCTTCGTCCTTAACAATACCAGGCCACCGCTGGGCAATTGGT
CACTTTTACTATGCCTGCAGAAGCAGGAATTGTTATGGTCCGGTGGCGACCCGTTAACCA

301 GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
TCGGTTGTACCTGGATGAACTCAACTGGATTACCAAAGTGTGCGGAGCGCCTCCTTGIG
AGCCAACATGGACCTACTTGAGTTGACCTAAGTGGTTTCACACGCCTCGCGGAGGAACAC

361 IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisPro
TCATCGGAGGGGGCGGGCAACAACACCCTGCACTGCCCACTGATTGCTTCCGCAAGCATC
AGTAGCCTCCCGCCCGTTGTTGTGGGACGTGACGGGGTGACTAACGAAGGCGTTGCTAG

421 AspAlaThrTyrSerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAsp
CGGACGCCACATACTCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTCG
GCCTGCGGTGTATGAGAGCCACGCCGAGGCCAGGGACCTAGTGTGGGTCCACGGACCAGC

481 TyrProTyrArgLeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArg
ACTACCCGTATAGGCTTTGGCATTATCCTTGATACCATCAACTACCCATATTTAAATCA
TGATGGGCATATCCGAAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAATTTAGT

541 MetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
GGATGTACGTGGGAGGGGTGCAACACAGGCTGGAAGCTGCCTGCAACTGGACGCGGGGCG
CCTACATGCACCTCCCAAGCTTGTGTCCGACCTTCGACGGACGTTGACCTGCGCCCCGC

601 ArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThrThr
AACGTTGCGATCTGGAAGACAGGGACAGGTCCGAGCTCAGCCCGTTACTGCTGACCACTA
TTGCAACGCTAGACCTTCTGTCCCTGTCCAGGCTCGAGTCGGGCAATGACGACTGGTGAT

661 GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIle
CACAGTGGCAGGTCTCTCCGTGTTCTTCCAAACCCTACCAGCCTTGTTCCACCGGCCTCA
GTGTACCGTCCAGGAGGGCACAAGGAAGTGTGGGATGGTCGGAACAGGTGGCCGGAGT

721 HisLeuHisGlnAsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAla
TCCACCTCCACCAGAACATTGTGGACGTGCACTACTTGTACGGGGTGGGGTCAAGCATCG
AGGTGGAGGTGGTCTTGTAACACCTGCACGTCATGAACATGCCCCACCCAGTTCGTAGC

781 SerTrpAlaIleLysTrpGluTyrValValLeuLeuPheLeuLeuAlaAspAlaArg
CGTCTGGGCCATTAAAGTGGGAGTACGTGTTCTCTCTGTTCTGCTTGCTGACAGCGCG
GCAGGACCCGGTAATTCACCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCG

841 ValCysSerCysLeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsn
GCGTCTGCTCCTGCTTGTTGGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGA
CGCAGACGAGGACGAACACCTACTACGATGAGTATAGGGTTCGCTCCGCCGAAACCTCT

901 LeuValIleLeuAsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuVal
ACCTCGTAATACTTAATGCAGCATCCCTGGCCGGGACGACGGTCTTGATCCTTCCTCG
TGGAGCATTATGAATTACGTGCTAGGGACCGGCCCTGCGTGCCAGAACATAGGAAGGAGC

FIG. 38

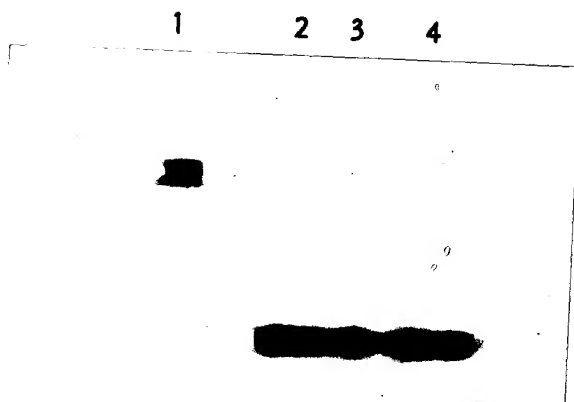


FIG. 40

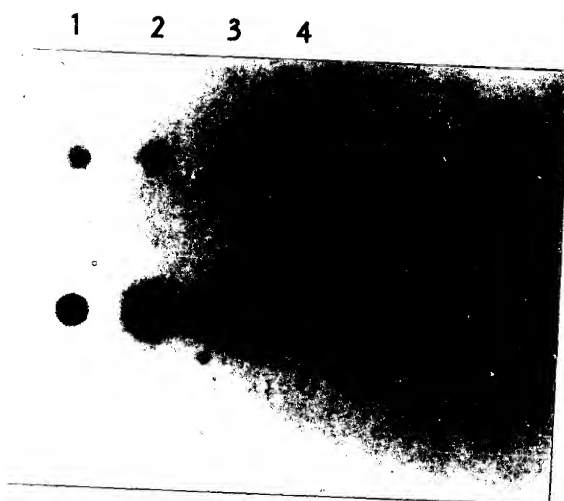


FIG. 39

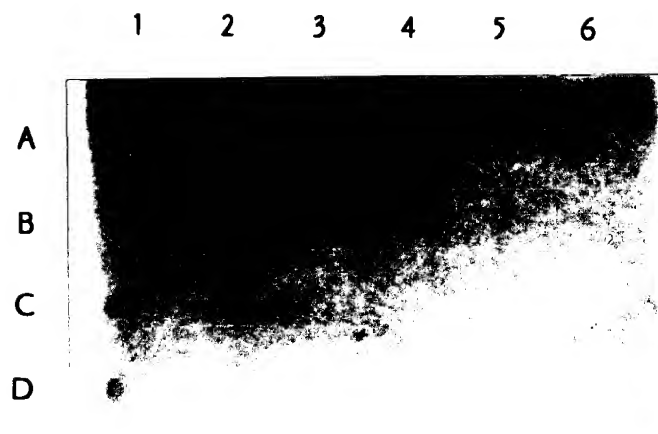


FIG. 41A

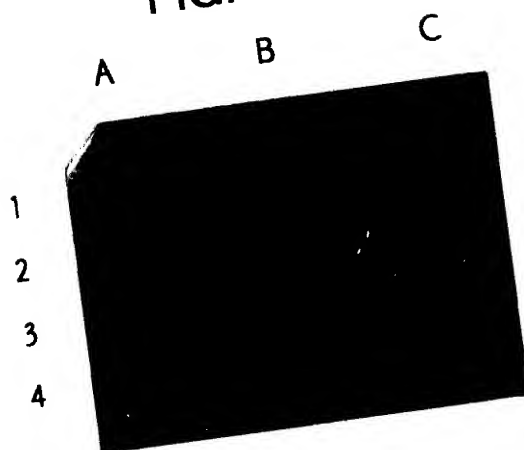
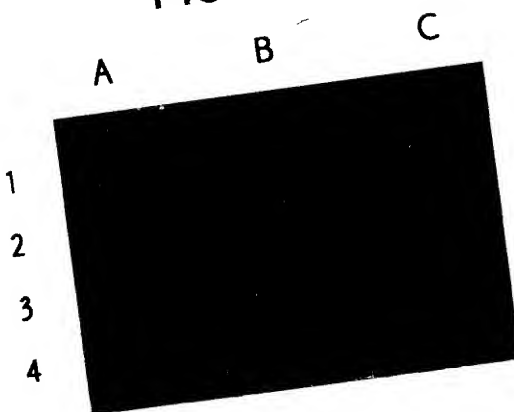


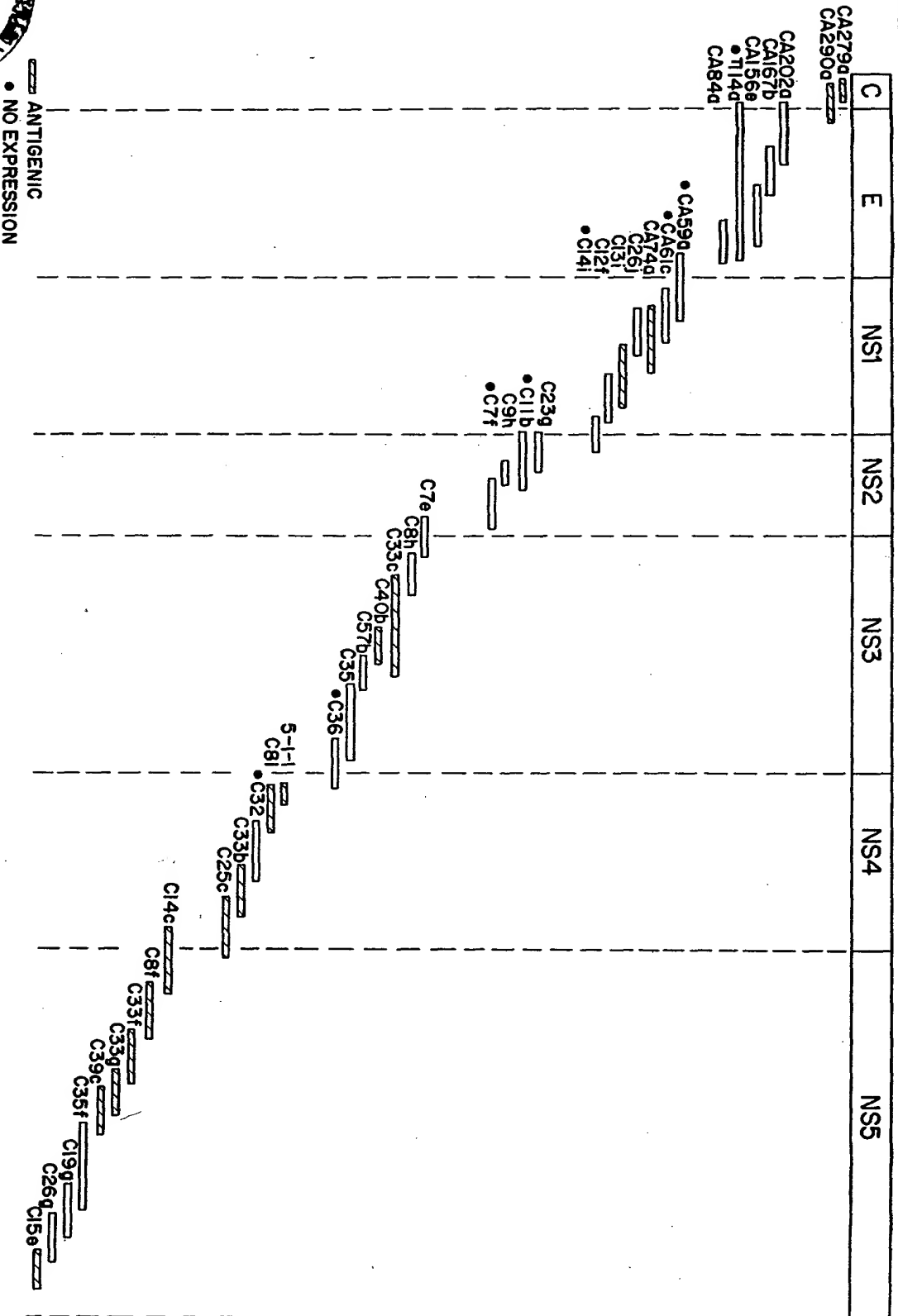
FIG. 41B



NH₂ -

FIG. 63

-COOH



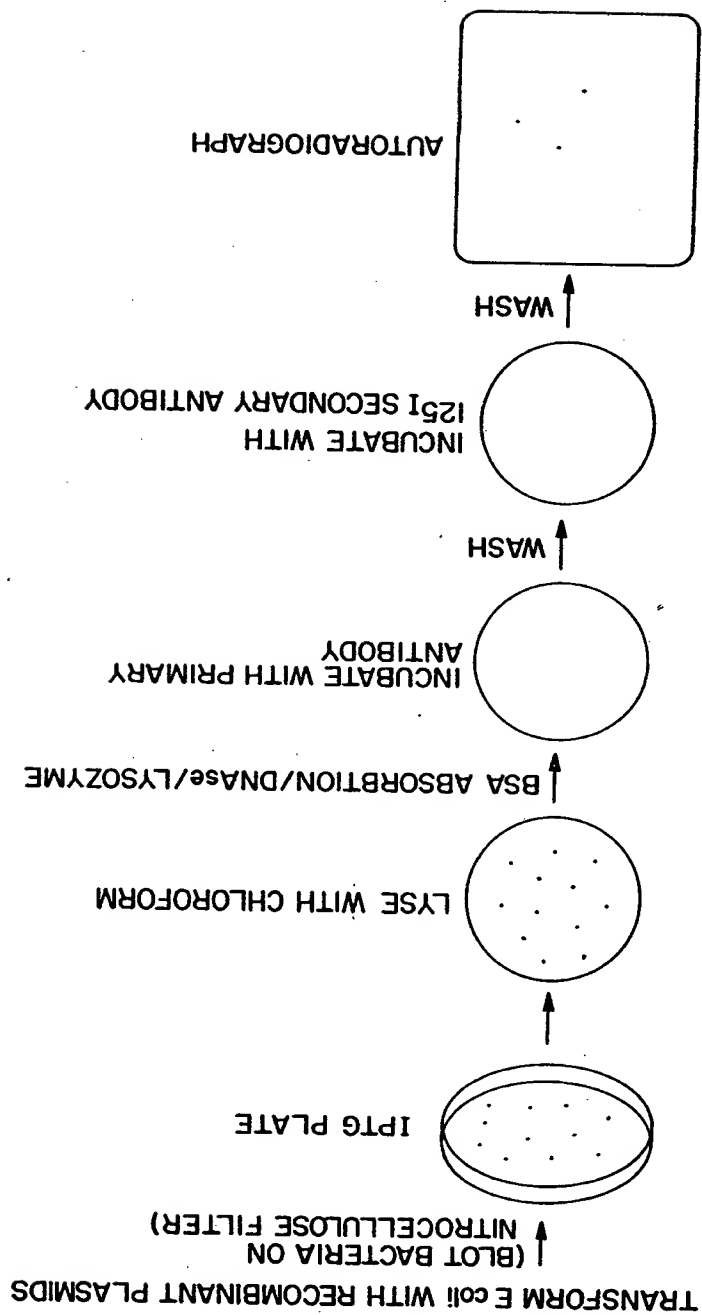


FIG. 64



OFFICE

	EXPRESSION LEVEL	CHIMPS			CHRONIC HCV PATIENT C100 POSITIVE								CHRONIC HCV PATIENT C100 NEGATIVE								CONVALESCENT C100 NEGATIVE	COMMUNITY AC					
		1 POST ACUTE	2 POST ACUTE	3 C100 CONVERSION																		1 C100(+)	2 C100(+)	3 C100(-)	4 C100(-)	5 C100(-)	
					1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8							
SOD	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CA259a	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
CA290a	-	-	-	-	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
CA202a	N.T.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA167a	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA156C	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
π14a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA84a	±	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA59a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA61C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
CA74a	+	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C26j	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C13i	±	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C12f	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C14i	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C23g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C11b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C9h	±	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C7f	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C7e	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C8h	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C33c	+	+	±	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	±	+	+	±	+	-	
C40g	±	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C37b	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C35	±	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C36	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
5-11	+	-	-	+	±	+	+	+	+	+	+	-	-	-	-	-	+	+	+	+	+	+	±	+	+	-	
C8i	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	
C32	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C33b	-	-	-	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C25c	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	
C14c	+	-	-	±	-	-	-	-	-	-	-	-	+	-	+	-	-	-	-	-	+	-	+	-	-	-	
C8f	±	-	-	+	-	-	+	+	+	-	+	+	-	-	-	-	+	-	-	-	+	+	-	-	-	-	
C33f	-	-	-	-	-	+	+	-	-	-	+	-	+	-	-	-	-	-	+	-	+	-	-	-	-	-	
C33g	±	-	-	-	-	-	+	-	-	-	+	-	+	-	-	-	-	-	-	-	-	+	+	-	-	-	
C39c	+	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	
C35f	N.T.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C19g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C26g	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
C15e	±	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	±	-	-	-	-	-	-	

N.T. = EXPRESSION NOT TESTED
 ± THIS POLYPEPTIDE WAS NEGATIVE IN THIS COLONY SCREEN BUT POSITIVE BY WESTERN BLOT ANALYSIS

FIG. 65



FIG. 66A

R T
MSTNPKPQKKNRNTNRRPQDVKFPGGGQIVGGVYLLPRRGPRLGVRATR
KTSERSQPRGRRQIPKARRPEGRTWAQPGYPWPLYGNEGCGWAGWLLSP-100
RGSRPSWGPTDPRRRSRNLGKVIDTLTCGFADLMGYIPLVGAPLGGAARA

T
LAHGVVRLEDGVNYATGNLPGCSFSIFLLALLSCLTVPASAYQVRNSTGL-200
YHVTNDCPNSSIVYEAADAILHTPGCVPCVREGNASRCWVAMTPTVATRD
GKLPATQLRRHIDLLVGSATLCSALYVGDLCGSVFLVGQLFTFSPRRHWT-300

V
TQGCNCSIYPGHITGHRMAWDMMMNWSPTTALVMAQLLRIPQAILDMIAG
AHWGVLAGIAYFSMVGNWAKVLVLLLFAGVDAETHVTGGSAGHTVSGFV-400
SLLAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWLGLFYHHKFNSS
GCPERLASCRPLTDFDQGWGPISYANGSGPDQRPYCYHYPKPCGIVPAK-500
SVCGPVYCFTSPVVGTTDRSGAPTYSWGENDTDVFLNNTRPPLGNWF
GCTWMNSTGFTKVCGAPPCVIGGAGNNTLHCPTDCFRKHPDATYSRCGSG-600

I
PWLTPRCLVDYPYRLWHYPCTINYTIFKIRMYVGGVEHRLEAACNWTGRG
RCDLEDNRSELSPLLLTTTQWQVLPSCFTTLPALSTGLIHLHQNIVDVQ-700
YLYGVGSSIASWAIKWEYVLLFLLADARVCSCLWMLLISQAEAALEN
LVILNAASLAGTHGLVSFLVFFCFAYWLKGWVPGAVYTFYGMWPLLLLL-800

(N)
LALPQRAYALDTEVAASCGGVVLVGLMALTLSPPYKRYISWCLWWLQYFL
TRVEAQLHVWIPPLNVRGGRDAVILLMCAVHPTLVFDITKLLAVFGPLN-900
ILQASLLKVYPFVRVQGLLRFCALARKMIGGHYVQMVIKLGALTGTYYV
NHLTPLRDWAHNGLRDLAVAVEFVVSQMETKLITWGADTAACGDIINGL-1000
PVSARRGREILLGPADGMVSKGWRLAPITAYAQQTRGLLGCIITSLTGR
DKNQVEGEVQIVSTAAQTTFATCINGVCWTVYHGAGTRTIASPKGPVIQM-1100
YTNDQDLVGWPAPOGSRSLTPCTCGSSDLYLVTRHADVIPVRRRGDSRG
SLLSPRPISYLGSSGGPLLCPAGHAVGIFRAAVCTRGVAKAVDFIPVEN-1200
LETTMRSPVFTDNSSPPVVPQSFQVAHLHAPTGS GKSTKVPAAYAAQGYK

L
VLVLNPSVAATLGFGAYMSKAHGIDPNIRTGVRTITTGSPITYSTYGKFL-1300
ADGGCSGGAYDIIICDECHSTDATSILGIGTVLDQAETAGARLVVLATAT
PPGSVTVPHPNIEEVALSTTGEIPFYGKAIPLEVIKGGRHILFCHSKKCC-1400
DELA AKLVALGINAVAYYRGLDVSVIPTSGDVVVVATDALMTGYTGDFDS

Y (S)
VIDCNTCVTQTVDFSLDPTFTIETITLPQDAVSRTQRRGRTRGKPGIYR-1500
FVAPGERPSGMFDSSVLCECYDAGCAWYELTPAETTVRLRAYMNTPGLPV
CQDHLEFWEGVFTGLTHIDAHFLSQTQSGENLPYLVAQATVCARAQAP-1600
PPSWDQMWKCLIRLKP TLHGPTLLYRLGAVQNEITLTHPVTKYIMTMS
ADLEVYVSTWVLVGGVLAALAAAYCLSTGCVVIVGRVVLGKPAIIPDREV-1700
LYREFDEMEECSQHLPIEQGMMLAEQFKQKALGLLQTASRQAEVIAPAV
QTNWQKLETFWAKHMWNFISGIQYLAGLSTLPGNPAIASLMAFTA AVTSP-1800
LTTSQTL LFNILGGWVAQLAAPGAATAFVGAGLAGAAIGSVGLGKVLID

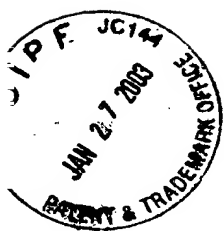


FIG. 66B

(G)
ILAGYGAGVAGALVAFKIMSGEVPSTEDLVNLLPAILSPGALVVGVVCAA-1900

(HC)
ILRRHVGPGEAVQWMNRLIAFASRGNHVSPTHYPESDAAARVTAILSS
LTVTQLLRRLHQWISSECTTPCSGSWLRDIWDWICEVLSDFKTWLKAKLM-2000

(V)
PQLPGIPFVSCQRGYKGVWRGDGIMHTRCHCGAEITGHVKNGTMRIVGPR
TCRNMWSGTFPINAYTTGPCTPLPAPNYTFALWRVSAEEYVEIRQVGDFH-2100
YVTGMTTDNLKCPCQVPSPEFFTEL DGVRLHRFAPPCKPLLREEVSFRVG
LHEYPVGSQLPCEPEPDVAVLTSMLTDP SHITAEAAGRRLARGSPPSVAS-2200
SSASQLSAPSLKATCTANHDSFDAELIEANLLWRQEMGGNITRVESENKV
VILDSFDPLVAEEDEREISVPAEILRKSRRAQALPVWARPDPYNPPLVET-2300

S
WKKPDYEPPVHGCPLPPPKSPPVPPPRKKRTVVLTESTLSTALAEATR

(FA)
SFGSSSTSGITGDNTTTSSEPA PS GCPPDSDAESYSSMPPLEGEPGDPDL-2400
SDGSWSTVSSEANAEDVCCSMSYSWTGALVTPCAAEEQKLPINALSNSL
LRHHNLVYSTTSRSACQRQKKVTFDR LQVLDSHYQDVLKEVKAAASKVKA-2500

(F)
NLLSVEEACSLTPPHSAKSKFGYGAKDVRCHARKAVTHINSVWKDILLEDN
VTPIDTTIMAKNEVFCVQPEKGGRKPARLIVFPDLGVRVCEKMALYDVVT-2600
KLPLAVMGSSYGQYSPGQRVEFLVQAWKSKKTPMGFSYDTRCFDSTVTE

(G)
SDIRTEEAIYQCCDLDPQARVAIKSLTERLYVGGPLTNSRGENCYRRCR-2700
ASGVLTTSCGNTLT CYIKARAACRAAGLQDCTMLVCGDDL VVICESAGVQ
EDAASLRAFTEAMTRYSA PP GDPPQPEYDLELITSCSSNVSV AHDGAGKR-2800
VYYLTRDPTTPLARAAWETARHTFVNSWLGNII MFAPTLWARMILMTHFF
SVLIARDQLEQALDCEIYGACYSIEPLDLPIIQRLHGLSAFSLHSYSPG-2900

G
EINRVAACLRKLGVPPLRAWRHRARSVRARLLARGGAAICGKYLFNNAV
RTKLK----- (Stop codon not yet reached)

() = Heterogeneity due to possible 5' or 3'
terminal cloning artefacts.

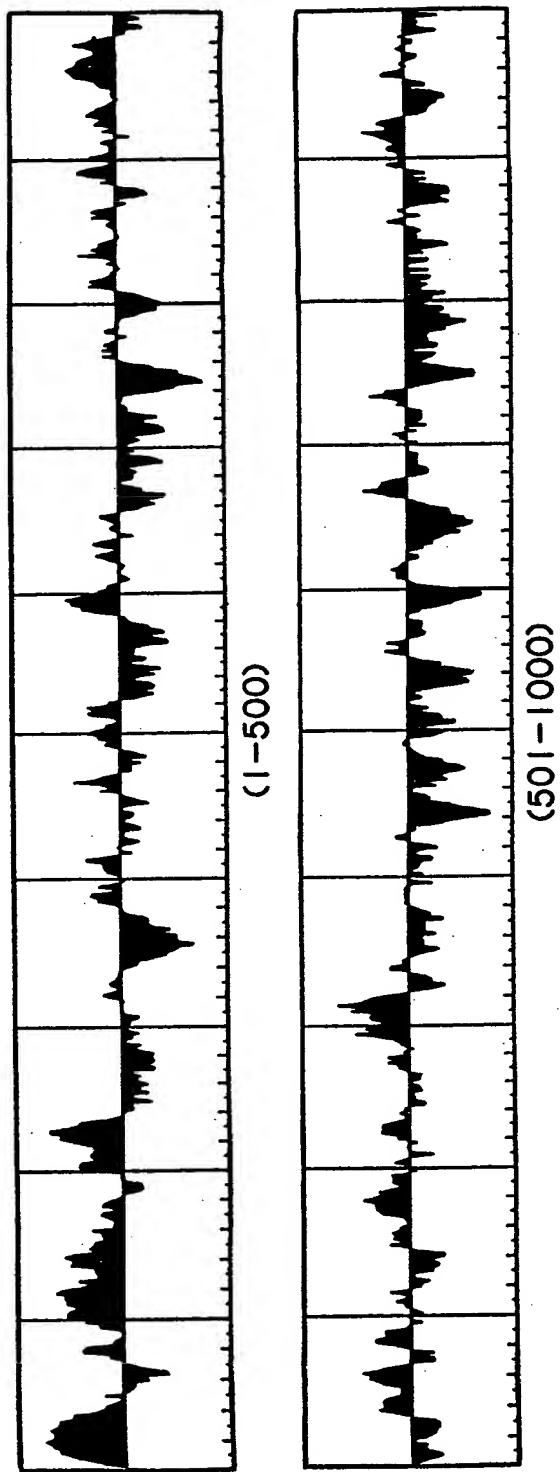


FIG. 67A

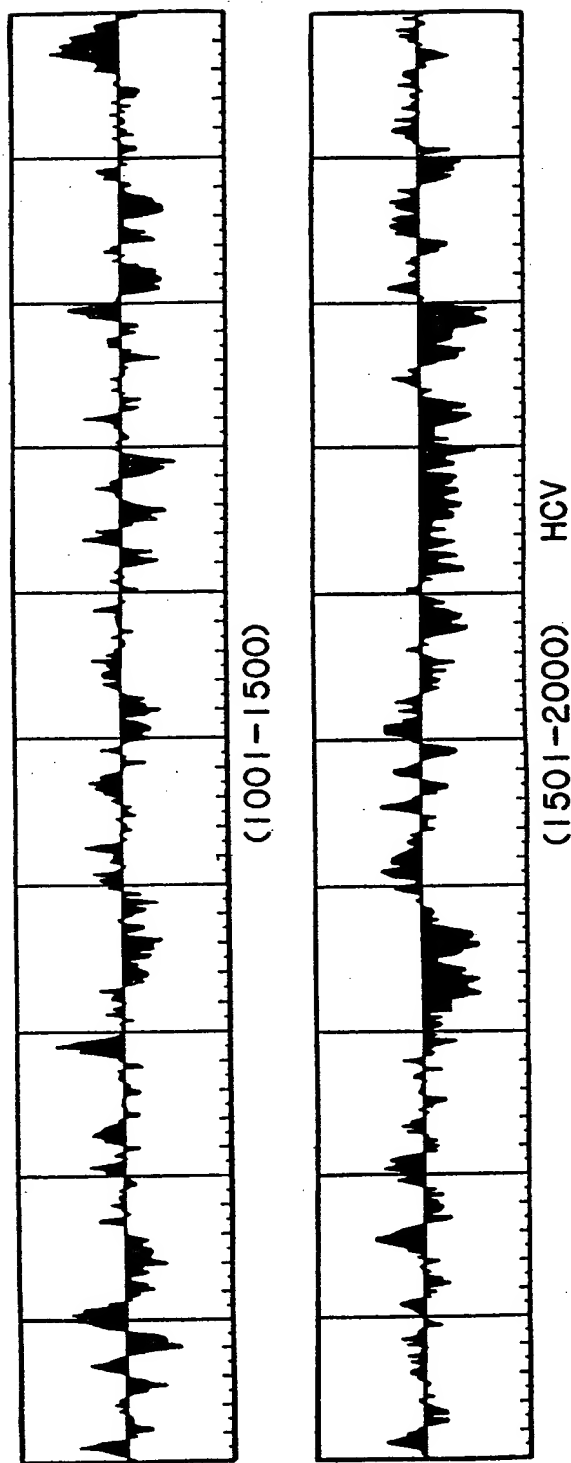


FIG. 67B

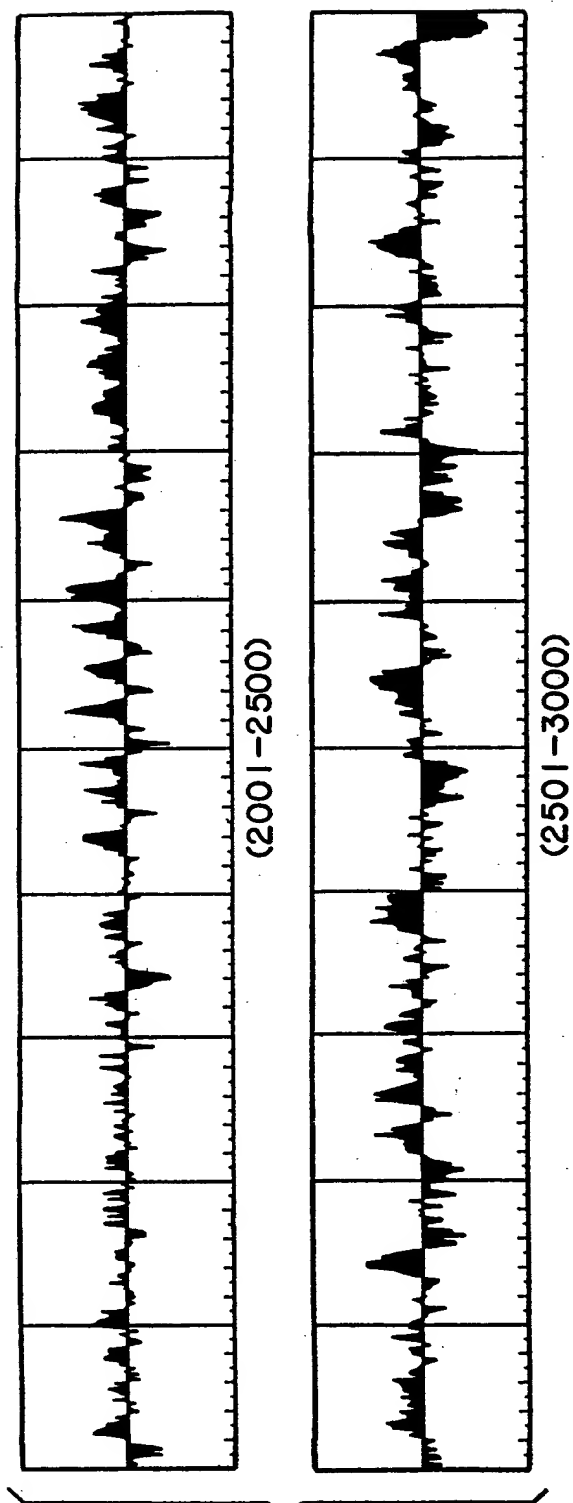


FIG. 67C

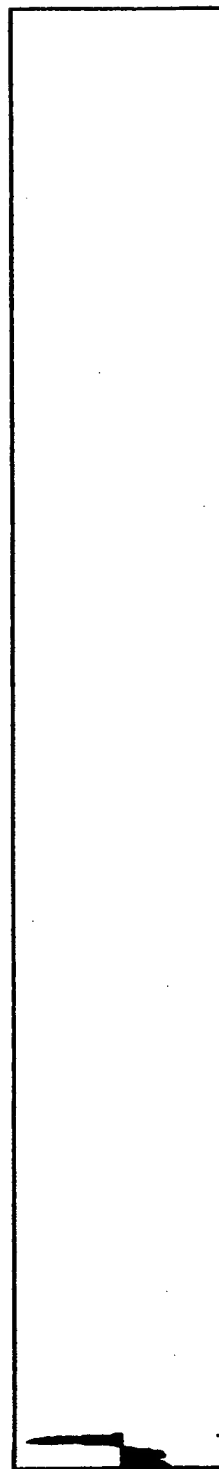
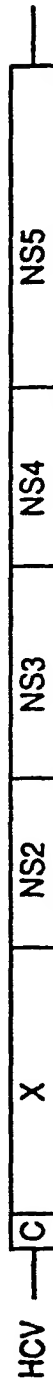
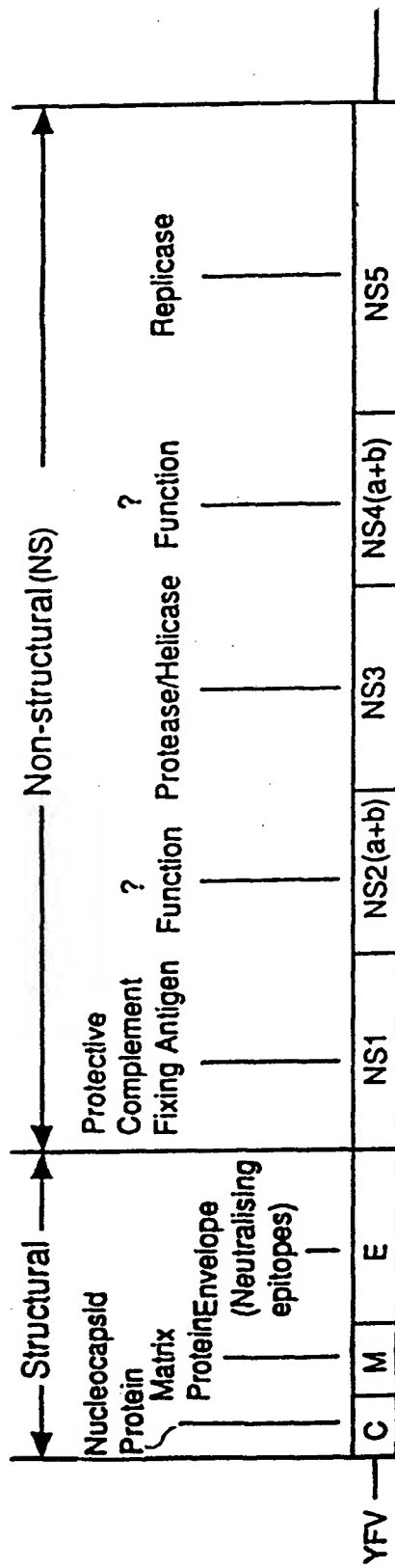


FIG. 67D



□ 5-1-1

□ C100

FIG. 69



FIG. 68

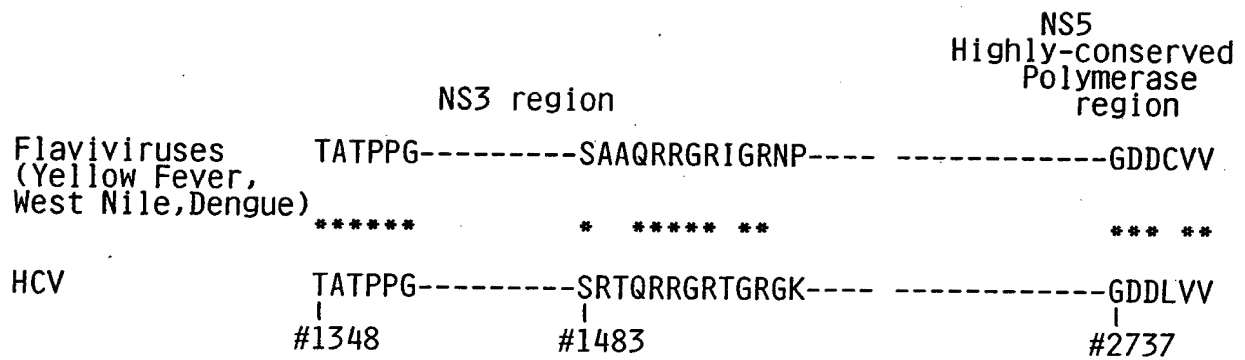


FIG. 73

5' CCGGGCGAGGGGGCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAAC 3'
3' CGCTCCCCCGTCACGTACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTG 5'

5' CATGTTTCCCCCTAATGAG 3'
3' GTACAAAGGGGGATTACTCAGC 5'



FIG. 70

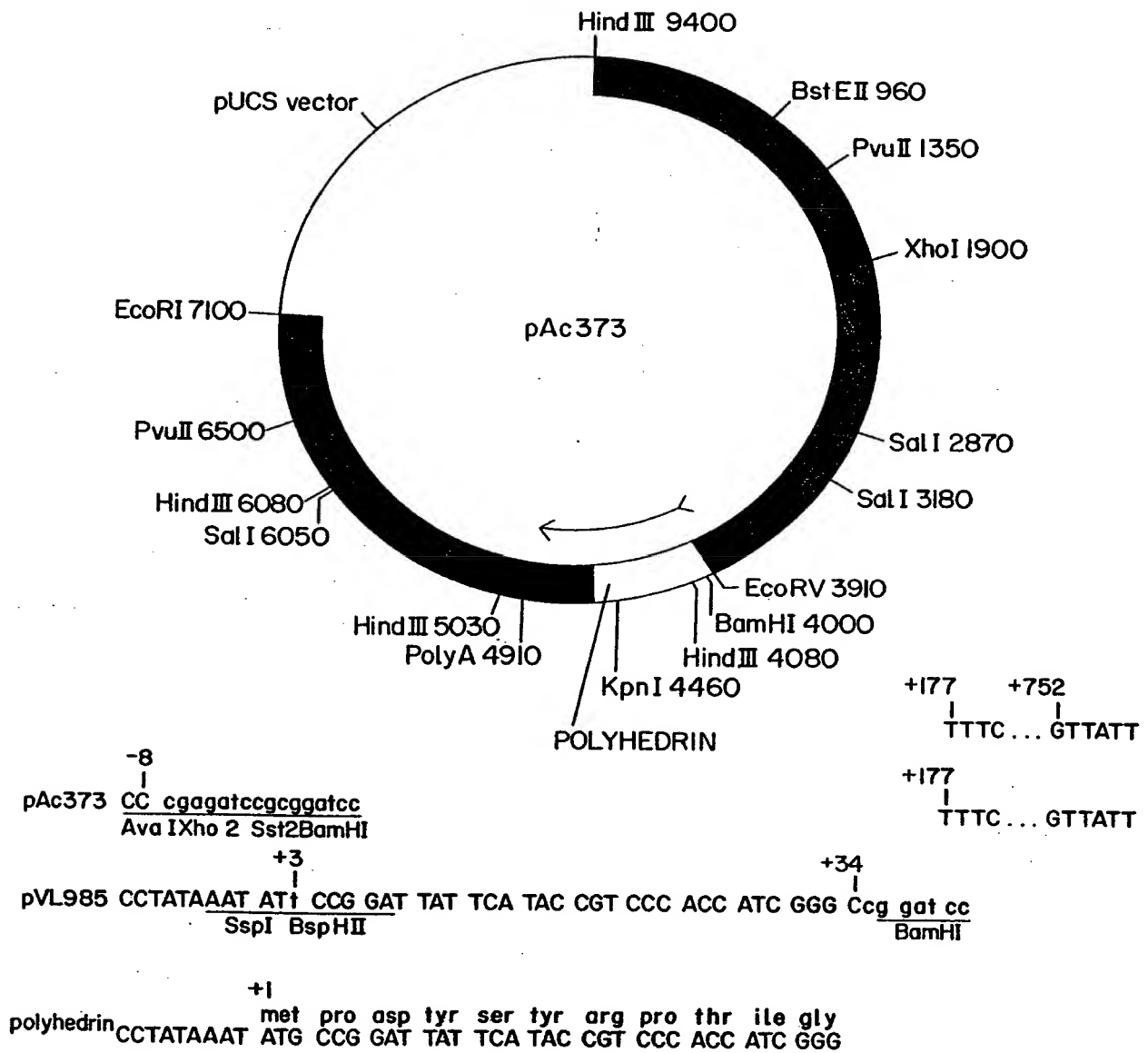


FIG. 71

-----Overlap with 16jh-----
 1 GlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTrpAlaValArgThrLysLeuLys
 GGCAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGCAGTAAGAACAAAGCTCAAA
 CCGTCCCGACGGTATACACCGTTTCATGGAGAGTTGACCCGTCATTCTTGTTCGAGTTT
 -
 61 LeuThrProIleAlaAlaAlaGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyr
 CTCACTCCAATAGCGCGCGCTGGCCAGCTGGACTTGTCCGGCTGTTTACGGCTGGCTAC
 GAGTGAGGTTATCGCCGCGACCGGTCGACCTGAACAGCGCCGACCAAGTCCCGACCGATG
 SerGlyGlyAspIleTyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
 121 AGCGGGGAGACATTATCACAGCGTGTCTCATGCCGCGCCCGCTGGATCTGGTTTTC
 TCGCCCCCTCTGTAAATAGTGTCGCCACAGAGTACGGGGCGGGCGACCTAGACCAAAACG
 181 CC
 GG

FIG. 72A

MetSerThrAsnProLysProGlnArgLysThrLysArgAsnThrAsnArgArgProGln
 1 ATGAGCACGAATCCTAAACCTCAAAACAAACAAACGTAACACCAACCGTCGCCACAG
 TACTCGTGCTTAGGATTGGAGTTTTTTGTGTTGCAATTGTGGTTGGCAGCGGGTGC
 AspValLysPheProGlyGlyGlyGlnIleValGlyGlyValTyrLeuLeuProArgArg
 61 GACGTCAAGTTCCCGGGTGGCGGTGAGATCGTTGGTGGAGTTTACTTGTCCCGCGCAGG
 CTGCAGTTCAAGGGCCACCGCCAGTCTAGCAACCACTCAATGAACAACGGCGGCTCC





FIG. 72B

121 GlyProArgLeuGlyValArgAlaThrArgLysThrSerGluArgSerGlnProArgGly
GGCCCTAGATTGGGTGCGCGGACGAGAAAGACTTCGAGCGGTGCAACCTCGAGGT
CCGGGATCTAACCCACACGCGCGCTCTCTTCTGAAGGCTCGCCAGCGTTGGAGCTCCA

181 ArgArgGlnProIleProLysAlaArgArgProGluGlyArgThrTrpAlaGlnProGly
AGACGTCAGCCTATCCCCAAGGCTCGTCGGCCCCGAGGCAGGACCTGGGCTCAGCCCCGG
TCTGCAGTCGGATAGGGTTCCGAGCAGCCGGGCTCCCGTCTCGACCCGAGTCGGGCCC

241 TyrProTrpProLeuTyrGlyAsnGluGlyCysGlyTrpAlaGlyTrpLeuLeuSerPro
TACCCTTGCCCCCTCTATGGCAATGAGGGCTGCGGGTGGCGGGATGGCTCCTGTCTCCC
ATGGGAACCGGGGAGATACCGTTACTCCGACGCCACCCGCCCTACCGAGGACAGAGG

301 ArgGlySerArgProSerTrpGlyProThrAspProArgArgSerArgAsnLeuGly
CGTGGCTCTCGCCCTAGCTGGGGCCCCACAGACCCCGCGGTAGTCCGCAATTGGGT
GCACCGAGAGCCGGATCGACCCCGGGTGTCTGGGGCCGCATCCAGCGCGTTAAACCCA

361 LysValIleAspThrLeuThrCysGlyPheAlaAspLeuMetGlyTyrIleProLeuVal
AAGGTCATCGATACCCCTTACGTGCGGCTTCGCCGACCTCATGGGGTACATACCGCTCGTC
TTCCAGTAGCTATGGGAATGCACGCCGCGAGCGGTGGAGTACCCCATGTATGGCGAGCAG

421 GlyAlaProLeuGlyGlyAlaAlaArgAlaLeuAlaHisGlyValArgValLeuGluAsp
GGGCCCCCTCTTGGAGGCGCTGCCAGGGCCCCCTGGCGCATGGCGTCCGGTTCTGGAAGAC
CCGGGGGAGAACCTCCCGGACGGTCCCGGGACCGCGGTACCGCAGGCCCAAGACCTTCTG



FIG. 72C

481 GlyValAsnTyrAlaThrGlyAsnLeuProGlyCysSerPheSerIlePheLeuLeuAla
GGCGTGAACTATGCAACAGGGAACCTTCCTGGTGGTCTCTCTATCTTCTCTGGCC
CCGCACTTGATACGTTGTCCCTTGAAGGACCAACGAGAAAGAGATAGAAAGAACCGG

541 LeuLeuSerCysLeuThrValProAlaSerAlaTyrGlnValArgAsnSerThrGlyLeu
CTGCTCTCTTGCTTGACTGTGCCCCGCTTCGGCCCTACCAAGTGCACAACCTCCACGGGCTT
GACGAGAGAAACGAACCTGACACGGGGGAAGCCGGATGGTTACCGCTTGAGGTGCCCCGAA

601 TyrHisValThrAsnAspCysProAsnSerSerIleValTyrGluAlaAlaAspAlaIle
TACCACGTCACCAATGATTGCCCTAACTCGAGTATTGTGTACGAGGCGCCGATGCCATC
ATGGTGCAGTGTTACTAACGGGATTGAGCTCATAACACATGCTCCCGGCTACGGTAG

661 LeuHisThrProGlyCysValProCysValArgGluGlyAsnAlaSerArgCysTrpVal
CTGCACACTCCGGGTGGTCCCTTGCCTTCGTGAGGGCAACGCTCGAGGTGTGGGTG
GACGTGTGAGGCCCCACGCAGGGAACGCAAGCACTCCCGTTGCGGAGCTCCACAACCCAC

721 AlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThrGlnLeuArgArg
GCGATGACCCCTACGGTGGCCACACGAGGATGGCAAACCTCCCCGCGACGCTTCGACGT
CGCTACTGGGGATGCCACCGGTGGTCCCTACCGTTTGAGGGCGCTGCGTCGAAGCTGCA

781 HisIleAspLeuLeuValGlySerAlaThrLeuCysSerAlaLeuTyrValGlyAspLeu
CACATCGATCTGCTTGTCGGGAGCGCCACCTCTGTTCGGCCCTCTACGTGGGGACCTG
GTGTAGCTAGACGAACAGCCCTCGCGGTGGGAGACAAGCCGGGAGATGACACCCCTGGAC

841 CysGlySerValPheLeuValGlyGlnLeuPheThrPheSerProArgArgHisTrpThr
TGCGGGTCTGTCTTTCTGTGCGGCAACTGTTCACCTTCTCTCCAGGCGCCACTGGACG
ACGCCCCAGACAGAAAGAACAGCCGGTTGACAAGTGGAAGAGAGGGTCCCGGGTGACCTGC



FIG. 72D

ThrGlnGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArgMetAlaTrp
901 ACGCAAGGTTGCAATTGCTCTATCTATCCCGGCATATAAACGGGTACCGCATGGCATGG
TGGCTTCCAAACGTTAACGAGATAGATAGGCGCGGTATATTGCCCCAGTGGCGTACCGTACC

AspMetMetMetAsnTrpSerProThrAlaLeuValMetAlaGlnLeuLeuArgIle
961 GATATGATGATGAACCTGGTCCCTACGACGGCGTTGGTAATGGCTCAGCTCCGGATC
CTATACTACTTGTACCGAGGGATGCTGCCGCAACCATTACCGAGTCGACGAGGCCCTAG

ProGlnAlaIleLeuAspMetIleAlaGlyAlaHisTrpGlyValLeuAlaGlyIleAla
1021 CCACAAGCCATCTTGGACATGATCGCTGGTGCTCACTGGGAGTCCCTGGGGCATAGCG
GGTGTTCCGTAGAACCTGTACTAGCGACCAACGAGTGACCCCTCAGGACCGCCCGTATCGC

TyrPheSerMetValGlyAsnTrpAlaLysValLeuValValLeuLeuPheAlaGly
1081 TATTTCTCCATGGTGGGAACCTGGGCGAAGGTCCTGGTAGTGCTGCTATTTGCCGGC
ATAAAGAGGTACCAACCCCTTGACCCCGCTTCCAGGACCATCACGACGACGATAAACGGCCG

ValAspAlaGluThrHisValThrGlyGlySerAlaGlyHisThrValSerGlyPheVal
1141 GTCGACGCGGAACCCACGTCAACCGGGGAAGTGCCGGCCACACTGTGTCTGGATTGTGT
CAGCTGCCGCCCTTTGGGTGCAGTGGCCCCCTTCACGGCCCGGTGTACACAGACCTAAACAA

SerLeuLeuAlaProGlyAlaLysGlnAsnValGlnLeuIleAsnThrAsnGlySerTrp
1201 AGCCTCCTCGCACCCAGGCGCCCAAGCAGAACGTCAGCTGATCAACACCAACGGCAGTTGG
TCGGAGGAGCGTGGTCCGCGGTTCGTCTTGACGGTCGACTAGTTGTGGTTCGCCGTCAACC



FIG. 72E

1261 HisLeuAsnSerThrAlaLeuAsnCysAsnAspSerLeuAsnThrGlyTrpLeuAlaGly
CACCTCAATAGCAGGCCCTGAACCTGCAATGATAGCCTCAACACCGCTGGTTGGCAGGG
GTGGAGTTATCGTGGCGGACTTGACGTTACTATCGGAGTTGTGGCCGACCAACCGTCCC

1321 LeuPheTyrHisHisLysPheAsnSerSerGlyCysProGluArgLeuAlaSerCysArg
CTTTTCTATCACCACAGTTCAACTCTTCAGGCTGTCTCGAGAGGCTAGCCAGCTGCCGA
GAAAGATAGTGGTGTCAAGTTGAGAAGTCCGACAGGACTCTCCGATCGGTCCGACGGCT

1381 ProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTyrAlaAsnGlySerGlyPro
CCCCTTACCGATTTTGACACGGGCTGGGCCCTATCAGTTATGCCAACGGAAGCGGCCCC
GGGGAATGGCTAAACTGGTCCCACCCCGGATAGTCAATACGGTTGCCCTTCGCCCGGGG

1441 AspGlnArgProTyrCysTrpHisTyrProProLysProCysGlyIleValProAlaLys
GACCAGCGCCCTACTGCTGGCACTACCCCAAAACCTTGCGGTATTGTGCCCCGGAAG
CTGGTCGGGGGATGACGACCGTGATGGGGGTTTTTGGAACGCCCATACACGGCGCTTC

1501 SerValCysGlyProValTyrCysPheThrProSerProValValGlyThrThrAsp
AGTGTGTGTGGTCCGGTATATTGCTTCACTCCACGCCCGGTGGTGGTGGAAACGACCGAC
TCACACACACCCAGGCCATATAACGAAGTGAGGGTCGGGGCACCAACCCCTTGCTGGCTG

1561 ArgSerGlyAlaProThrTyrSerTrpGlyGluAsnAspThrAspValPheValLeuAsn
AGGTCGGGGCGGCCACCTACAGCTGGGGTGAAATGATACGGACGCTCTTCGTCCTTAAC
TCCAGCCCCGCGGGTGGATGTCGACCCCACTTTTACTATGCTGCAGAACGAGGAATTG



FIG. 72F

1621 AsnThrArgProProLeuGlyAsnTrpPheGlyCysThrTrpMetAsnSerThrGlyPhe
AATACCAAGCCACCGCTGGCAATTGGTTGGTTGTACCTGGATGAACCTCAACTGGATTCT
TTATGGTCCCGGTGGCGACCCCGTTAACCAAGCCAAACATGGACCTACTTGAGTTGACCTAAG

1681 ThrLysValCysGlyAlaProProCysValIleGlyGlyAlaGlyAsnAsnThrLeuHis
ACCAAAGTGTGGGAGCGCCTCCTTGTGTCTATCGGAGGGGGGCAACAACACCTGCAC
TGGTTTCACACGCGCTCGCGGAGGAACACAGTAGCCTCCCCGCCCGTTGTGTGGGACGTG

1741 CysProThrAspCysPheArgLysHisProAspAlaThrTyrSerArgCysGlySerGly
TGCCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATACCTCTCGGTGCGGCTCCGGT
ACGGGTGACTAACGAAGCGTTCTGTAGGCCCTGCGGTGTATGAGAGCCACGCCGAGGCCA

1801 ProTrpLeuThrProArgCysLeuValAspTyrProTyrArgLeuTrpHisTyrProCys
CCCTGGATCACACCCAGGTGCTGTCGACTACCCGTATAGGCTTTGGCATATATCCTTGT
GGACCTAGTGTGGTCCACGGACCACTGATGGGCATATCCGAAACCGTAATAGGAACA

1861 ThrIleAsnTyrThrIlePheLysIleArgMetTyrValGlyGlyValGluHisArgLeu
ACCATCAACTACACCATATTTAAATCAGGATGTACGTGGGAGGGGTCGAACACAGGCTG
TGGTAGTTGATGTGGTATAAAATTTAGTCCCTACATGCACCCCTCCCCAGCTTGTGTCCGAC

1921 GluAlaAlaCysAsnTrpThrArgGlyGluArgCysAspLeuGluAspArgAspArgSer
GAAGCTGCCCTGCAACTGGACGCGGGCGAACGTTCGATCTGGAAGACAGGACAGGTCC
CTTCGACGGACGTTGACCTGCGCCCCCGCTTGCAACGCTAGACCTTCTGTCTCCCTGTCCAGG

1981 GluLeuSerProLeuLeuLeuThrThrThrGlnTrpGlnValLeuProCysSerPheThr
GAGCTCAGCCCCGTTACTGCTGACCCTACACAGTGGCAGGTCTCCCGTGTCTCTTCACA
CTCGAGTCGGGCAATGACGACTGGTGTATGTGTACCCGTCCAGGAGGGCACAAAGGAAGTGT



FIG. 72G

2041 ThrLeuProAlaLeuSerThrGlyLeuIleHisLeuHisGlnAsnIleValAspValGln
ACCCACACAGCCTTGTCACCGGCTCATCCACCTCCACAGAACATTTGGACGTGCAG
TGGGATGTCGGAAACAGGTGGCCGGAGTAGGTGGAGTGGTCTTGTAACACCTGCACGTC

2101 TyrLeuTyrGlyValGlySerSerIleAlaSerTrpAlaIleLysTrpGluTyrValVal
TACTTGTAACGGGTGGGTCAAGCATCGCGTCCTGGGCCATTAAAGTGGAGTACGTCGTT
ATGAACATGCCCCACCCAGTTCGTAGCGCAGGACCCGGTAATTCAACCTCATGCAGCAA

2161 LeuLeuPheLeuLeuAlaAspAlaArgValCysSerCysLeuTrpMetMetLeuLeu
CTCCTGTTCCCTTGCTTGCAAGACGGCGCTCTGCTCCTGCTTGTGGATGATGCTACTC
GAGACAAAGGAAGACGACGTCTGCGCGCGCAGACGAGGACGAACCTACTACGATGAG

2221 IleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeuAsnAlaAlaSerLeuAla
ATATCCCAAGCGAGGGGCTTTGGAGAACCTCGTAATACTTAATGCAGCATCCCTGGCC
TATAGGGTTCCGCTCCGCCGAAACCTCTTGGAGCATTAATGAATTACGTCGTAGGGACCCG

2281 GlyThrHisGlyLeuValSerPheLeuValPhePheCysPheAlaTrpTyrLeuLysGly
GGGACGCACGGTCTTGATATCCTTCCTCGTGTCTTCTGCTTGGCATGGTATTGAAGGGT
CCCTGCGTGCCAGAACATAGGAAGGAGCACAAAGAACGAAACGTACCATAAACTTCCCA

2341 LysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrpProLeuLeuLeuLeu
AAGTGGGTGCCCCGAGCGGTCTACACCTTCTACGGGATGTGGCCTCTCCTCCTCCTG
TTCACCCACGGGCTCGCCAGATGTGGAAGATGCCCCACACCGGAGAGGACGAGGAC



FIG. 72H

2401	LeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluValAlaAlaSerCysGlyGly TTGGCGTTGCCCCAGCGGGCTACGCGTGGACACGAGGTGGCGCGTCTGTGGCGGT AACCGCAACGGGTGCGCCCGCATGCGGACCTGTGCCTCCACCGGCGCAGCACACCGCCA
2461	ValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyrTyrLysArgTyrIleSer GTGTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTCCACCATATTACAAGCGCTATATCAGC CAACAAGAGCAGCCCCAACTACCGCGACTGAGACAGTGGTATAATGTTCCGGATATAGTCG
2521	TrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGluAlaGlnLeuHisValTrp TGGTGCTTGTGGTGGCTTCAGTATTTTCTGACCAGAGTGGAAAGCGCAACTGCACGTGTGG ACCACGAACACCAACCGAAGTCATAAAAGACTGGTCTCACCTTCGCGTTGACGTGCACACC
2581	IleProProLeuAsnValArgGlyGlyArgAspAlaValIleLeuLeuMetCysAlaVal ATTCCCCCCTCAACGTCCGAGGGGGCGCGACCGCTCATCTTACTCATGTGTGCTGTA TAAGGGGGGAGTTGCAGGCTCCCCCGGCTGCGGCAGTAGAATGAGTACACACGACAT
2641	HisProThrLeuValPheAspIleThrLysLeuLeuAlaValPheGlyProLeuTrp CACCCGACTCTGGTATTGTACATCACCAAATTGCTGTGGCCGTCTTCGGACCCCTTTGG GTGGGCTGAGACCAATAAACTGTAGTGGTTTAAACGACGACCGGCAGAACCTGGGGAAACC
2701	IleLeuGlnAlaSerLeuLeuLysValProTyrPheValArgValGlnGlyLeuLeuArg ATTCTTCAAGCCAGTTTGCTTAAAGTACCCTACTTTGTGCGCGTCCAAGGCCCTTCTCCGG TAAGAAGTTCGGGTCAAACCGAATTTTCATGGGATGAAACACGCGCAGGTTCCGGGAAGAGGCC



FIG. 72I

2761 PheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrValGlnMetValIleIleLys
TTCTGCGCGTTAGCGGAGATGATCGGAGGCCATTACGTGCAAAATGGTCATCATTAAG
AAGACGCGCAATCGCGCCTTCTACTAGCCTCCGGTAATGCACGTTTACCAGTAGTAATTC

2821 LeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThrProLeuArgAspTrpAla
TTAGGGCGCCTTACTGGCACCTATGTTTATAACCATCTCACTCCTCTTCGGGACTGGCGG
AATCCCCGCGAATGACCGTGGATACAAATATTGGTAGAGTGAGGAGAACCCCTGACCCCGC

2881 HisAsnGlyLeuArgAspLeuAlaValAlaValGluProValValPheSerGlnMetGlu
CACAAAGGCTTGCGAGATCTGGCCGTGGCTGTAGAGCCAGTCGTCTTCTCCCAAATGGAG
GTGTTGCCGAACGCTCTAGACCGGCACCGACATCTCGGTGAGCAGAGAGGGTTTACCTC

2941 ThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGlyAspIleIleAsnGlyLeu
ACCAAGCTCATCACGTGGGGGCAGATACCGCCGCTGCGGTGACATCATCAACGGCTTG
TGGTTCGAGTAGTGCAACCCCCCTCTATGGCGGCGCACGCCACTGTAGTAGTTGCCGAAC

3001 ProValSerAlaArgArgGlyArgGluIleLeuLeuGlyProAlaAspGlyMetValSer
CCTGTTTCCGCCCGCAGGGCCGGAGATACTGCTCGGGCCAGCCGATGGAATGGTCTCC
GGACAAAGCGGGCGTCCCCCGCCCTCTATGACGAGCCCCGGTCGGCTACCTTACCAGAGG

3061 LysGlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGlnGlnThrArgGlyLeuLeu
AAGGGGTGGAGGTTGCTGGCGCCCCATCACGGCGTACGCCACGACAGAGGGGCCCTCTA
TTCCCCACCTCCAACGACCGCGGGTAGTGCCCGCATGCGGGTCTGTCTCCCCGGAGGAT

3121 GlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGlnValGluGlyGluValGln
GGGTGCATAATCACCAAGCCTAACTGCGCGGACAAACCAAGTGGAGGTGAGGTCCAG
CCCACGTATTAGTGTCGGATTGACCGGCCCTGTTTTTGTTCACCTCCCACTCCAGGTC



FIG. 72J

3181 IleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIleAsnGlyValCysTrpThr
ATTGTGTCAACTGTCGCCAAACCTTCTTGGCAACGTCATCAATGGGTGTGCTGGACT
TAACACAGTTGACGACGGGTTTGGAAAGGACCGTTGCACGTAGTTACCCACACGACCTGA

3241 ValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLysGlyProValIleGlnMet
GTCTACCACGGGGCCGGAACGAGGACCATCGCGTCACCCCAAGGTCCTGTCTATCCAGATG
CAGATGGTGGCCCGCCCTTGCTCCTGTAGCGCAGTGGGTTCCAGGACAGTAGGTCTAC

3301 TyrThrAsnValAspGlnAspLeuValGlyTrpProAlaProGlnGlySerArgSerLeu
TATACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCCGCAAGTAGCCGCTCATTTG
ATATGGTTACATCTGGTTCTTGGAACACCCGACCGGGCGAGCGGTTCCATCGGCGAGTAAC

3361 ThrProCysThrCysGlySerSerAspLeuTyrLeuValThrArgHisAlaAspValIle
ACACCCCTGCACCTTGGGCTCCTCGGACCTTTACCTGTGTACGAGGCACGCCGATGTCAATT
TGTGGGACGTGAACGCCGAGGAGCCCTGGAAATGGACCAGTCTCCGTGCGGCTACAGTAA

3421 ProValArgArgArgGlyAspSerArgGlySerLeuLeuSerProArgProIleSerTyr
CCCGTGGCCCGGGGGGTGATAGCAGGGGCAGCCTGTCTGTGCCCCCGGCCCATTTCCCTAC
GGCACGCGGCGGCCCACTATCGTCCCCGTGGACGACAGCGGGGCGGGGTAAAGGATG

3481 LeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGlyHisAlaValGlyIlePhe
TTGAAAGGCTCCTCGGGGGTCCGCTGTGTGCCCCCGGGGCACGCCGTGGCATATTT
AACTTTCCGAGGAGCCCCCAGGCGACAAACACGGGGGCCCCCGTGGCCACCCGTATAAA

3541 ArgAlaAlaValCysThrArgGlyValAlaLysAlaValAspPheIleProValGluAsn
AGGGCCGGGTGTGCACCCGTGGAGTGGCTAAGGCGGTGACCTTATCCCTGTGGAGAAC
TCCCCGGGCCACACGTGGGCACCTCACCGATTCCGCCCACTGAATAGGACACCTCTTG



FIG. 72K

3601 LeuGluThrThrMetArgSerProValPheThrAspAsnSerSerProProValValPro
CTAGAGACAACCATGAGGTCCCGGTGTTACGGATAACTCTCTCTCCACCATGAGTGCCC
GATCTCTGTTGTACTCCAGGGGCCACAAGTGCCTATTGAGGAGAGGTGGTCATCACGGG

3661 GlnSerPheGlnValAlaHisLeuHisAlaProThrGlySerGlyLysSerThrLysVal
CAGAGCTTCCAGGTGGCTCACCTCCATGCTCCACAGGCAGCGGCAAAAGCACCAAGGTC
GTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGCTCCGTGCGCGTTTTCGTGGTTCCAG

3721 ProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeuAsnProSerValAlaAla
CCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTCAACCCCTCTGTTGCTGCA
GGCCGACGTATACGTCGAGTCCCGATATTCACGATCATGAGTTGGGGAGACACGACGT

3781 ThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIleAspProAsnIleArgThr
ACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGATCGATCCTAACATCAGGACC
TGTGACCCCGAAACCCACGAATGTACAGGTTCCGAGTACCCCTAGCTAGGATTGTAGTCCCTGG

3841 GlyValArgThrIleThrThrGlySerProIleThrTyrSerThrTyrGlyLysPheLeu
GGGGTGAGAACAAATTACCACTGGCAGCCCCATCACGTACTCCACCTACGGCAAGTTCCCTT
CCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGATGAGGTGGATGCCGTTCAAGGAA

3901 AlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleCysAspGluCysHisSer
GCCGACGGCGGTGCTCGGGGGCGCTTATGACATAATAATTGTGACGAGTGCCACTCC
CGGCTGCCGCCACGAGCCCCCGGGAATACTGTATTATTAAACACTGCTCACGGTGAGG

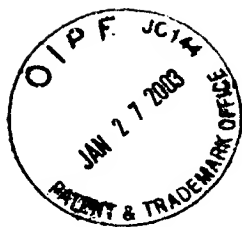


FIG. 72L

3961 ThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAspGlnAlaGluThrAlaGly
ACGGATGCCACATCCATCTTGGGCATCGGCACTGTCTTGACCAAGCAGAGACTGCGGGG
TGCCCTACGGTGTAGTAGAACCCGTAGCCGTGACAGGAAGTGGTTCGTCTCTGACGCCCC

4021 AlaArgLeuValValLeuAlaThrAlaThrProProGlySerValThrValProHisPro
GCGAGACTGGTGTGCTCGCCACCGCCACCCCTCCGGGCTCCGTCACTGTGCCCCCATCCC
CGCTCTGACCAACACGAGCGGTGGCGGTGGGAGGCCCGAGGCAGTGACACGGGGTAGGG

4081 AsnIleGluGluValAlaLeuSerThrThrGlyGluIleProPheTyrGlyLysAlaIle
AACATCGAGGAGGTGCTCTGTCTCCACCACCGGAGAGATCCCTTTTACGGCAAGGTATC
TTGTAGCTCCTCCAAACGAGACAGGTGGTGGCCCTCTCTAGGGAAAAATGCCGTTCGGATAG

4141 ProLeuGluValIleLysGlyGlyArgHisLeuIlePheCysHisSerLysLysLysCys
CCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTTCTGTCAATCAAAGAAGAAGTGC
GGGAGCTTCATTAGTTCCCCCTCTGTAGTAGTAGAAGACAGTAAGTTTCTTCTTCACG

4201 AspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAlaValAlaTyrTyrArgGly
GACGAACTCGCCGCAAGCTGGTCGCATTGGGCATCAATGCCGTGGCCTACTACCGCGGT
CTGCTTGAGCGCGGTTTCGACCCAGCGTAACCCGTAGTTACGGCACCGGATGATGGCGCCA

4261 LeuAspValSerValIleProThrSerGlyAspValValValAlaThrAspAlaLeu
CTTGACGTGTCCGTCATCCCGACCGGCGGATGTTGTCTGTCTGGCAACCGATGCCCTC
GAAC TGACAGGCAGTAGGGCTGGTCCGCCGTACAAACAGCAGCACCGTTGGCTACGGGAG



FIG. 47B

PhePheCysPheAlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrIhrPhe
961 TGTTCCTTCTGCTTTGCATGGTATTTGAAGGGTAAGTGGGTGCCCCGAGCGGTCTACACCT
ACAAGAAGACGAAACGTACCATAAACTTCCCATTACCCACGGGCCTCGCCAGATGTGGA

TyrGlyMetTrpProLeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeu
1021 TCTACGGGATGTGGCCTCTCCTCCTGCTCCTGTTGGCGTTGCCCCAGCGGGCGTACGCGC
AGATGCCCTACACGGAGAGGAGGACGAGGACAACCGCAACGGGGTCTGCCCGCATGCGCG

AspThrGluValAlaAlaSerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThr
1081 TGGACACGGAGGTGGCCGCGTCTGTGGCGGTGTTGTTCTCGTCGGGTTGATGGCGCTGA
ACCTGTGCCTCCACGGGCGCAGCACACCGCCACAACAAGAGCAGCCAACTACCGCGACT

LeuSerProTyrTyrLysArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeu
1141 CTCTGTCAACCATATTACAAGCGCTATATCAGCTGGTGTGTTGGTGGCTTCAGTATTTTC
GAGACAGTGGTATAATGTTGCGGATATAGTCGACCACGAACACCACCGAAGTCATAAAAG

ThrArgValGluAlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArg
1201 TGACCAGAGTGGAAAGCGCAACTGCACGTGTGGATTCCCCCCTCAACGTCCGAGGGGGGC
ACTGGTCTCACCTTCGCGTTGACGTGCACACCTAAGGGGGGGAGTTGCAAGGCTCCCCCG

AspAlaValIleLeuLeuMetCysAlaValHisProThrLeuValPheAspIleThrLys
1261 GCGACGCGCTCATCTTACTCATGTGTGCTGTACACCCGACTCTGGTATTTGACATACCA
CGCTGCGGCAGTAGAATGAGTACACACGACATGTGGGCTGAGACCATAAACTGTAGTGGT

LeuLeuLeuAlaValPheGlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValPro
1321 AATTGCTGCTGGCCGTCTTCGACCCCTTTGGATTCTTCAAGCCAGTTTGCTTAAAGTAC
TTAACGACGACCGGCAAGCCTGGGGAAACCTAAGAAGTTCGGTCAAACGAATTTTCATG

TyrPheValArgValGlnGlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGly
1381 CCTACTTTGTGCGCGTCCAAGGCCCTTCTCCGGTCTGCGCGTTAGCGCGGAAGATGATCG
GGATGAAACACGCGCAGGTTCCGGAAAGAGGCCAAGACGCGCAATCGCGCCTTCTACTAGC

GlyHisTyrValGlnMetValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyr
1441 GAGGCCATTACGTGCAAATGGTCAATTAAGTTAGGGGCGCTTACTGGCACCTATGTTT
CTCCGGTAATGCACGTTTACCAAGTAGTAATTCAATCCCCGCGAATGACCGTGGATACAAA

AsnHisLeuThrProLeuArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAla
1501 ATAACCATCTCACTCCTCTTCGGGACTGGGCGCACACGGCTTGCAGATCTGGCCGTGG
TATTGGTAGAGTGAGGAGAAGCCCTGACCCGCGTGTGGCGAAGCCTAGACCGGCGACC

ValGluProValValPheSerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThr
1561 CTGTAGAGCCAGTCTCTTCTCCAAATGGAGACCAAGCTCATCAGTGGGGGGCAGATA
GACATCTCGGTACGAGAAAGAGGTTTACCTCTGGTTCGAGTAGTGACCCCCCGTCTAT

AlaAlaCysGlyAspIleIleAsnGlyLeuProValSerAlaArgArgGlyArgGluIle
1621 CCGCCGCGTGGGTTGACATCATCAACGGCTTGCCTGTTTCCGCCCCGAGGGGGCGGGAGA
GGCGGCGCACGCCACTGTAGTAGTTGCCGAACGGACAAAGGCGGGCGTCCCCGGCCCTCT

LeuLeuGlyProAlaAspGlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThr
1681 TACTGCTCGGGCCAGCCGATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCCATCA
ATGACGAGCCCGGTCTGGCTACCTTACCAGAGGTTCCCACTTCAACGACCGCGGGTAGT

AlaTyrAlaGlnGlnThrArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArg
1741 CGGCGTACGCCCAGCAGACAAGGGGCTCTAGGGTGCATAATCACCAGCCTAACTGGCC
GCCGATGCGGGTCTGTCTGTTCCCGGAGGATCCACGTATTAGTGGTCTGGATTGACCGG

AspLysAsnGlnValGluGlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeu
1801 GGGACAAAACCAAGTGGAGGGTGGAGGTCCAGATTGTGTCAACTGCTGCCCAAACCTTCC
CCCTGTTTTTGGTTACCTCCCACTCCAAGTCTAACACAGTTGACGACGGGTTTGGAAAG

AlaThrCysIleAsnGlyValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIle
1861 TGGCAACGTGCATCAATGGGGTGTGCTGGACTGTCTACCACGGGGCGGAACGAGGACCA
ACCGTTGCACGTAGTTACCCACACGACCTGACAGATGGTGCCCCGGCCTTGCTCCTGGT

AlaSerProLysGlyProValIleGlnMetTyrThrAsnValAspGlnAspLeuValGly
1921 TCGCGTACCCAAAGGGTCTGTCTCATCCAGATGTATACCAATGTAGACCAAGACCTTGTTGG



FIG. 47C

1981 TrpProAlaProGlnGlySerArgSerLeuThrProCysThrCysGlySerSerAspLeu
GCTGGCCCGCTCCGCAAGGTAGCCGCTCATTGACACCCTGCACTTGCCTCGGACC
CGACCGGGCGAGGCGTTCCATCGGCGAGTAAGTGTGGGACGTGAACGCCGAGGAGCCTGG

2041 TyrLeuValThrArgHisAlaAspValIleProValArgArgArgGlyAspSerArgGly
TTTACCTGGTCACGAGGACGCGCATGTCTATCCCGTGCCTGGCGGGGTGATAGCAGGG
AAATGGACCAAGTGTCTCGTGCCTACAGTAAGGGACGCGGGCGCCCACTATCGTCCC

2101 SerLeuLeuSerProArgProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeu
GCAGCCTGCTGTCGCCCCGGCCATTTCTACTTGAAAGGCTCCTCGGGGGGTCCGCTGT
CGTCGGACGACAGCGGGGCGGGTAAAGGATGAAGTTTCCGAGGAGCCCCCAGGCGACA

2161 CysProAlaGlyHisAlaValGlyIlePheArgAlaAlaValCysThrArgGlyValAla
TGTGCCCCGCGGGGACGCGGTGGGCGATATTTAGGGCGCGGTGTGCACCCGTGGAGTGG
ACACGGGGCGCCCCGTGCGGACCCGTATAAATCCCGGCGCCACAGTGGGCACCTCACC

2221 LysAlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPhe
CTAAGGCGGTGGACTTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCGGTGT
GATTCCGCCACCTGAAATAGGGACACCTCTTGATCTCTGTTGGTACTCCAGGGGCCACA

2281 ThrAspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAla
TCACGGATAACTCCTCTCCACCAAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATG
AGTGCTATTGAGGAGAGGTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTAC

2341 ProThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLys
CTCCACAGGACGCGGCAAAAGCACCAAGGTCCCGGTGCATATGCAGCTCAGGGCTATA
GAGGGTGTCCGTGCGCGTTTTCTGTTTCCAGGGCCGACGTATACGTGAGTCCCGATAT

2401 ValLeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLys
AGGTGCTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGTCTACATGTCCA
TCCACGATCATGAGTTGGGGAGACAACGACGTTGTGACCCGAAACCAGAAATGTACAGGT

2461 AlaHisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerPro
AGGCTCATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCC
TCCGAGTACCCTAGCTAGGATTGTAGTCTGCCCCACTCTTGTAAATGGTGACCGTCCG

2521 IleThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyr
CCATCACGTACTCCACCTACGGCAAGTTCTTGGCGACGGCGGGTGTCTCGGGGGCGCTT
GGTAGTGATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCGAA

2581 AspIleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGly
ATGACATAATAATTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATCG
TACTGTATTATTAAACACTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAGC

2641 ThrValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThr
GCACTGTCTTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCA
CGTGACAGGAAGTGGTTCGTCTCTGACGCCCCGCTCTGACCAACACGAGCGGTGGCGGT

2701 ProProGlySerValThrValProHisProAsnIleGluGluValAlaLeuSerThrThr
CCCCCGGGCTCCGTCCTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCA
GGGGAGGCCGAGGCAAGTACACGGGGTAGGGTTGTAGCTCTCAACGAGACAGGTGGT

2761 GlyGluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHis
CCGGAGAGATCCCTTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGAC
GGCTCTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCTCTG

2821 LeuIlePheCysHisSerLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeu
ATCTCATCTTCTGTCTTCAAAGAAAGTGGACGAACTCGCCGAAAGCTGGTTCGAT
TAGAGTAGAAGACAGTAAGTTTCTTCTTACGCTGCTTGAGCGGCGTTTCGACCAAGCGTA

2881 GlyIleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGly
TGGGCATCAATGCCGTGGCCTACTACCGGGTCTTGACGTGTCCGTCTCCGACCAAGCG
ACCGTAGTTACGGACCGGATGATGGCGCCAGAACTGCACAGGCAAGTAGGGCTGGTCCG

2941 AspValValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSer
GCGATGTTGTCGTCGTCGCAACCGATGCCCTCATGACCGGCTATACGGGCGACTTCGACT
CGCTACAACAGCAGCACCCTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGA



FIG. 47D

Val Ile Asp Cys Asn Thr Cys Val Thr Gln Thr Val Asp Phe Ser Leu Asp Pro Thr Phe
3001 CGGTGATAGACTGCAATACGTGTGTACCCAGACAGTCGATTTTCAGCCTTGACCCTACCT
GCCACTATCTGACGTTATGCACACAGTGGGTCTGTACGCTAAAGTCGGAACCTGGGATGGA

Thr Ile Glu Thr Ile Thr Leu Pro Gln Asp Ala Val Ser Arg Thr Gln Arg Arg Gly Arg
3061 TCACCATTGAGACAATCACGCTCCCCAGGATGCTGTCTCCCGCACTCAACGTCGGGGCA
AGTGGTAACCTCTGTAGTGCAGGGGGCTCTACGACAGAGGGCGTGAGTTGACGCCCCGT

Thr Gly Arg Gly Lys Pro Gly Ile Tyr Arg Phe Val Ala Pro Gly Glu Arg Pro Ser Gly
3121 GGACTGGCAGGGGGAAGCCAGGCATCTACAGATTTGTGGCACCAGGGGGAGCGCCCTCCG
CCTGACCGTCCCCCTTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGC

Met Phe Asp Ser Ser Val Leu Cys Glu Cys Tyr Asp Ala Gly Cys Ala Trp Tyr Glu Leu
3181 GCATGTTTCACTCGTCCGTCCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGC
CGTACAAGCTGAGCAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCG

Thr Pro Ala Glu Thr Thr Val Arg Leu Arg Ala Tyr Met Asn Thr Pro Gly Leu Pro Val
3241 TCACGCCCCGCGAGACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCG
AGTGGGGCGGCTCTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGC

Cys Gln Asp His Leu Glu Phe Trp Glu Gly Val Phe Thr Gly Leu Thr His Ile Asp Ala
3301 TGTGCCAGGACCATCTTGAAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATG
ACACGGTCTCTGGTAGAACTTAAACCCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTAC

His Phe Leu Ser Gln Thr Lys Gln Ser Gly Glu Asn Leu Pro Tyr Leu Val Ala Tyr Gln
3361 CCCACTTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACC
GGGTGAAAGATAGGGTCTGTTTCGTCTACCCCTCTTGGAAAGGAATGGACCATCGCATGG

Ala Thr Val Cys Ala Arg Ala Gln Ala Pro Pro Ser Trp Asp Gln Met Trp Lys Cys
3421 AAGCCACCGTGTGCGCTAGGGCTCAAGCCCCCTCCCCATCGTGGGACCAGATGTGGAAGT
TTCGGTGGCACACGCGATCCCGAGTTCGGGGAGGGGGTAGCACCTGGTCTACACCTTCA

Leu Ile Arg Leu Lys Pro Thr Leu His Gly Pro Thr Pro Leu Leu Tyr Arg Leu Gly Ala
3481 GTTTGATTGCGCTCAAGCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCG
CAAATAAGCGGAGTTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGC

Val Gln Asn Glu Ile Thr Leu Thr His Pro Val Thr Lys Tyr Ile Met Thr Cys Met Ser
3541 CTGTTCAAGATGAAATCACCTGACGCAACCCAGTCACCAAATACATCATGACATGCATGT
GACAACTCTTACTTATGAGGGACTGCGTGGGTGAGTGGTTTATGTAGTACTGTACGTACA

Ala Asp Leu Glu Val Val Thr Ser Thr Trp Val Leu Val Gly Gly Val Leu Ala Ala Leu
3601 CGGCCGACCTGGAGGTGCTCACGAGCACCTGGGTGCTCGTTGGCGGCTCTGGCTGCTT
GCGGGCTGGACCTCCAGCAGTGTCTGTGGACCCACGAGCAACCGCCGACGACCGACGAA

Ala Ala Tyr Cys Leu Ser Thr Gly Cys Val Val Ile Val Gly Arg Val Val Leu Ser Gly
3661 TGGCCGCGTATTGCTGTCAACAGGCTGCGTGGTCAATGAGTGGGAGGGTCTGCTTGTCCG
ACCGGCGCATAACGGACAGTTGTCCGACGCACCAAGTATCACCCGTCCAGCAGAACAGGC

Lys Pro Ala Ile Ile Pro Asp Arg Glu Val Leu Tyr Arg Glu Phe Asp Glu Met Glu Glu
3721 GGAAGCCGGCAATCATACCTGACAGGGAAGTCTCTACCGAGAGTTTCATGAGATGGAAG
CCTTCGGCCGTTAGTATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTC

Cys Ser Gln His Leu Pro Tyr Ile Glu Gln Gly Met Met Leu Ala Glu Gln Phe Lys Gln
3781 AGTGCTCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGC
TCACGAGAGTCTGTAATGGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTGC

Lys Ala Leu Gly Leu Leu Gln Thr Ala Ser Arg Gln Ala Glu Val Ile Ala Pro Ala Val
3841 AGAAGGCCCTCGGCCTCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCTGCTG
TCTTCCGGGAGCCGGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGAC

Gln Thr Asn Trp Gln Lys Leu Glu Thr Phe Trp Ala Lys His Met Trp Asn Phe Ile Ser
3901 TCCAGACCAACTGGCAAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCA
AGGTCTGGTTGACCGTTTTTGAAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGT

Gly Ile Gln Tyr Leu Ala Gly Leu Ser Thr Leu Pro Gly Asn Pro Ala Ile Ala Ser Leu
3961 GTGGGATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCAT
CACCTATGTTATGAACGCCCGAACAGTTGCGACGGACATTGGGGCGGTAAACGAAGTA



FIG. 47E

MetAlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsn
4021 TGATGGCTTTTACAGCTGCTGTCACCAGCCCACTAACCCTAGCCAAACCTCCTCTTCA
ACTACCGAAAATGTCGACGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGAGAAGT

IleLeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheVal
4081 ACATATTGGGGGGGTGGGTGGCTGCCAGCTCGCCGCCCCGGTGCCGCTACTGCCTTTG
TGTATAACCCCCCACCACCGACGGGTGAGCGGGGGGCCACGGCGATGACGGAAAC

GlyAlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAsp
4141 TGGGCGCTGGCTTAGCTGGCGCCGCGCATCGGCACTGTTGGACTGGGGAAGGTCCTCATAG
ACCCGCGACCGAATCGACCGCGCGGTAGCCGTACAACCTGACCCCTTCCAGGAGTATC

IleLeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSer
4201 ACATCCTTGACGGGTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGA
TGTAGGAACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACT

GlyGluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGly
4261 GCGGTGAGGTCCCCTCCACGGAGGACCTGGTCAATCTACTGCCGCGCATCCTCTCGCCCC
CGCCACTCCAGGGGAGGTGCCTCTGGACCACTTAGATGACGGGCGGTAGGAGAGCGGGC

AlaLeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGlu
4321 GAGCCCTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCCGGCACGTTGGCCCCGGCG
CTCGGGAGCATCAGCCGACCAAGACACGTCGTTATGACGCGCCGTGCAACCGGGCCCCG

GlyAlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
4381 AGGGGGCAGTGACGTGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTT
TCCCCGTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAA

ProThrHisTyrValProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSer
4441 CCCCCACGCACTACGTGCCGGAGAGCGATGCAGCTGCCGCGTCACTGCCATACTCAGCA
GGGGGTGCGTGATGCACGGCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGT

LeuThrValThrGlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThr
4501 GCCTCACTGTAACCCAGCTCCTGAGGCGACTGCACCACTGGATAAGCTCGGAGTGATCCA
CGGAGTGACATTGGGTGAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGT

ProCysSerGlySerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAsp
4561 CTCCATGCTCCGGTTCCCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCG
GAGGTACGAGGCCAAGGACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACCTCGC

PheLysThrTrpLeuLysAlaLysLeuMetProGlnLeuProGlyIleProPheValSer
4621 ACTTTAAGACCTGGCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCTTTGTGT
TGAAATTCTGGACCGATTTTCGATTGAGTACGGTGTGACGGACCCTAGGGGAAACACA

CysGlnArgGlyTyrLysGlyValTrpArgValAspGlyIleMetHisThrArgCysHis
4681 CCTGCCAGCGCGGGTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCC
GGACGGTGCGCCCATATTCCCCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGG

CysGlyAlaGluIleThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArg
4741 ACTGTGGAGCTGAGATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCCTA
TGACACCTCGACTCTAGTGACCTGTACAAGTTTTTGCCCTGCTACTCCTAGCAGCCAGGAT

ThrCysArgAsnMetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCys
4801 GGACCTGCAGGAACATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCCT
CCTGGACGTCTTGTACACCTCACCTGGAAGGGGTAATTACGGATGTGGTGCCCGGGGA

ThrProLeuProAlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyr
4861 GTACCCCCCTTCTGCGCCGAACCTACAGTTTCGCGCTATGGAGGGTGTCTGCAGAGGAAT
CATGGGGGGAAGGACGCGGCTTGTGTGCAAGCGCGATACCTCCACAGACGTCTCCTTA

ValGluIleArgGlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeu
4921 ATGTGGAGATAAGGCAAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATC
TACACCTCTATTCCGTCCACCCCTGAAGGTGATGCACTGCCATACTGATGACTGTTAG

LysCysProCysGlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeu
4981 TCAAATGCCCCGTGCCAGGTCCCATCGCCGAATTTTTACAGAATTGGACGGGGTGGCGC
AGTTTACGGGACCGTCCAGGGTAGCGGGCTAAAAAGTGTCTTAACCTGCCCCACGCGG



FIG. 47F

HisArgPheAlaProProCysLysProLeuLeuArgGluGluValSerPheArgValGly
5041 TACATAGGTTTTCGCCCCCTGCAAGCCCTTGTCTGCGGAGGAGGTATCATTAGAGTAG
ATGTATCCAAACGCGGGGGGACGTTGCGGAACGACGCCCTCTCCATAGTAAGTCTCATC

LeuHisGluTyrProValGlySerGlnLeuProCysGluProGluProAspValAlaVal
5101 GACTCCACGAATACCCGGTAGGGTCGCAATTACCTTGCAGAGCCGAAACGGACGTGGCCG
CTGAGGTGCTTATGGGCCATCCAGCGTTAATGGAACGCTCGGGCTTGGCTGCACCGG

LeuThrSerMetLeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeu
5161 TGTGACGTCCATGCTCACTGATCCCTCCCATATAACAGCAGAGGCGGGCGGCGAAGGT
ACAACTGCAGGTACGAGTGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCGCTTCCA

AlaArgGlySerProProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSer
5221 TGGCGAGGGGATCACCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCAT
ACCGCTCCCTAGTGGGGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCGAGGTA

LeuLysAlaThrCysThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsn
5281 CTCTCAAGGCACTTGCACCGCTAACCATGACTCCCTGATGCTGAGCTCATAGAGGCCA
GAGGTTCCGTTGAACGTGGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGT

LeuLeuTrpArgGlnGluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysVal
5341 ACCTCCTATGGAGGCAGGAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAAACAAG
TGGAGGATACCTCCGCTCTACCCGCCGTTGTAGTGGTCCCAACTCAGTCTTTTGTTC

ValIleLeuAspSerPheAspProLeuValAlaGluGluAspGluArgGluIleSerVal
5401 TGGTGATTCTGGACTCCTTCGATCCGCTTGTGGCGAGGAGGACGAGCGGGAGATCTCCG
ACCACTAAGACCTGAGGAAGCTAGGCGAACACCGCCTCCTCTGCTCGCCCTAGAGGC

ProAlaGluIleLeuArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArg
5461 TACCCGCAGAAATCCTGCGGAAGTCTCGGAGATTGCGCCAGGCCCTGCCCCGTTTGGGCGC
ATGGGCGTCTTTAGGACGCCCTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAAACCCGCG

ProAspTyrAsnProProLeuValGluThrTrpLysLysProAspTyrGluProProVal
5521 GGCCGGACTATAACCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCACTG
CCGGCTGATATTGGGGGGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGAC

ValHisGlyCysProLeuProProProLysSerProProValProProProArgLysLys
5581 TGGTCCATGGCTGTCCGCTTCCACCTCCAAAGTCCCTCCTGTGCCTCCGCCTCGGAAGA
ACCAGGTACCGACAGGCGAAGGTGGAGGTTTCAGGGGAGGACACGAGGCGGAGCCTTCT

ArgThrValValLeuThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArg
5641 AGCGGACGGTGGTCTCACTGAATCAACCTATCTACTGCCTTGGCCGAGCTCGCCACCA
TCGCCTGCCACCAGGAGTGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGT

SerPheGlySerSerSerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGlu
5701 GAAGCTTTGGCAGCTCCTCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTG
CTTCGAAACCGTCGAGGAGTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGTAGGAGAC

ProAlaProSerGlyCysProProAspSerAspAlaGluSerTyrSerSerMetProPro
5761 AGCCCGCCCTTCTGGCTGCCCCCGACTCCGACGCTGAGTCCTATTCTCCATGCCCC
TCGGGCGGGGAAGACCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGG

LeuGluGlyGluProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSer
5821 CCCTGGAGGGGGAGCCTGGGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCAGTA
GGGACCTCCCCCTCGGACCCCTAGGCCTAGAATCGCTGCCAGTACCAAGTTGCCAGTCAT

GluAlaAsnAlaGluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeu
5881 GTGAGGCCAACGCGGAGGATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCAC
CACTCCGGTTGCGCTCCTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTG

ValThrProCysAlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeu
5941 TCGTACCCCGTGCGCCGCGGAAGAACAAGAACTGCCATCAATGCACTAAGCAACTCGT
AGCAGTGGGGCACGCGGCGCTTCTTGTCTTTGACGGGTAGTTACGTGATTCTGTTGAGCA

LeuArgHisHisAsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLys
6001 TGCTACGTCAACCAATTTGGTGTATTCCACCACCTCACGCAAGTCTTGCCAAAGGCAGA
ACGATGCAGTGGTGTAAACCACATAAGGTGGTGGAGTGCCTCACGAACGGTTTCCGTCT



FIG. 47G

LysValThrPheAspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGlu
6061 AGAAAGTCACATTTGACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGG
TCTTTCAGTGTAACCTGTCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCC

ValLysAlaAlaAlaSerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSer
6121 AGGTTAAAGCAGCGGCGTCAAAAGTGAAGGCTAAGTTGCTATCCGTAGAGGAAGCTTGCA
TCCAATTTCTGTCGCCGCAATTTCACTTCCGATTGAACGATAGGCATCTCCTTCGAACGT

LeuThrProProHisSerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCys
6181 GCCTGACGCCCCACACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTT
CGGACTGCGGGGGTGTGAGTCGGTTTAGGTTCAAACCAATACCCCGTTTTCTGCAGGCAA

HisAlaArgLysAlaValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsn
6241 GCCATGCCAGAAAGGCCGTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACA
CGGTACGGTCTTTCGGCATTGGGTGTAGTTGAGGCACACCTTCTGGAAGACCTTCTGT

ValThrProIleAspThrThrIleMetAlaLysAsnGluValPheCysValGlnProGlu
6301 ATGTAACACCAATAGACACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTCCAGCTG
TACATTGTGGTTATCTGTGATGGTAGTACCGATTCTTGCTCCAAAGACGCAAGTCGGAC

LysGlyGlyArgLysProAlaArgLeuIleValPheProAspLeuGlyValArgValCys
6361 AGAAGGGGGGTCGTAAGCCAGCTCGTCTCATCGTGTTCCTCCGATCTGGGCGTGCCTGT
TCTTCCCCCAGCATTGCGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACA

GluLysMetAlaLeuTyrAspValValThrLysLeuProLeuAlaValMetGlySerSer
6421 GCGAAAAGATGGCTTTGTACGACGTGGTTACAAAGCTCCCTTGGCCGTGATGGGAAGCT
CGCTTTTCTACCGAAACATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCTTCTGA

TyrGlyPheGlnTyrSerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSer
6481 CCTACGGATTCCAATACTCACCAGGACAGCGGGTTGAATTCCTCGTGCAAGCGTGGAAAT
GGATGCCTAAGGTTATGAGTGGTCTGTGCGCCAACTTAAGGAGCACGTTCTGCACCTTCA

LysLysThrProMetGlyPheSerTyrAspThrArgCysPheAspSerThrValThrGlu
6541 CCAAGAAAACCCCAATGGGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTG
GGTTCTTTTGGGGTTACCCCAAGAGCATACTATGGGCGACGAACTGAGGTGTCAGTGAC

SerAspIleArgThrGluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArg
6601 AGAGCGACATCCGTACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCAAGCCC
TCTCGCTGTAGGCATGCTCCTCCGTTAGATGTTACAACACTGGAGCTGGGGGTTCCGGG

ValAlaIleLysSerLeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArg
6661 GCGTGGCCATCAAGTCCCTCACCAGAGAGGCTTTATGTTGGGGGCCCTCTTACCAATTCAA
CGCACCGGTAGTTACAGGGAGTGGCTCTCCGAAATACAACCCCGGGAGAATGTTAAAGTT

GlyGluAsnCysGlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGly
6721 GGGGGGAGAACTGCGGCTATCGCAGGTGCCGCGGAGCGGCGTACTGACAAGTACTGTG
CCCCCTCTTGACGCCGATAGCGTCCACGGCGCGCTCGCCGATGACTGTTGATCGACAC

AsnThrLeuThrCysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAsp
6781 GTAACACCCTCACTTGCTACATCAAGGCCCGGGCAGCCTGTGAGCCGAGGGCTCCAGG
CATTGTGGGAGTGAACGATGTAATTCGGGGCCGTCGGACAGCTCGGCCTCCGAGGTTCC

CysThrMetLeuValCysGlyAspAspLeuValValIleCysGluSerAlaGlyValGln
6841 ACTGCACCATGCTCGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGTCC
TGACGTGGTACGAGCACACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCAGG

GluAspAlaAlaSerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProPro
6901 AGGAGGACGCGGCGAGCCTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCC
TCCTCCTGCGCGCTCGGACTCTCGGAAGTGCTCCGATACTGGTCCATGAGGCGGGGGG

GlyAspProProGlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnVal
6961 CTGGGGACCCCCACAACCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCCAACG
GACCCCTGGGGGGTGTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGC

SerValAlaHisAspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThr
7021 TGTCAAGTCGCCCCACGACGGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCTACAA
ACAGTCAGCGGGTGTGCGCGACCTTTCTCCAGATGATGGAGTGGGCACTGGGATGTT

FIG. 47H

ProLeuAlaArgAlaAlaIrpGluThrAlaArgHisThrProValAsnSerTrpLeuGly
7081 CCCCCCTCGCGAGAGCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCTCTGGCTAG
GGGGGGAGCGCTCTCGACGCACCCCTCTGTCGTTCTGTGTGAGGTCAGTTAAGGACCGATC

AsnIleIleMetPheAlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePhe
7141 GCAACATAATCATGTTTGCCCCCACACTGTGGCGGAGGATGATGATGACCCCATTTCT
CGTTGTATTAGTACAAACGGGGGTGTGACACCCGCTCCTACTATGACTACTGGGTAAGA

SerValLeuIleAlaArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAla
7201 TTAGCGTCCTTATAGCCAGGACCCAGCTTGAAACAGGCCCTCGATTGCGAGATCTACGGGG
AATCGCAGGAATATCGGTCCCTGGTCGAACCTTGTCGGGAGCTAACGCTCTAGATGCCCC

CysTyrSerIleGluProLeuAspLeuProProIleIleGlnArgLeu
7261 CCTGCTACTCCATAGAACCACTTGATCTACCTCCAAATCATTTCAAAGACTC
GGACGATGAGGTATCTTGGTGAAC TAGATGGAGGTTAGTAAGTTTCTGAG

FIG. 48

ProSerProValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGly
1 CTCCAGCCCGTGGTGGGAACGACCGACAGTGGCGCGCTACCTACAGCTGGG
GAGGTCGGGGCACCAACCCCTTGTGCTGCTCCAGCCCGCGGATGGATGTCGACCC

GluAsnAspThrAspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPhe
61 GTGAAATGATACGGACGCTCTTCCTTAACAATACAGGCCACCGCTGGCAATTGGT
CACTTTACTATGCTGCAGAACGAGGAATTGTTATGGTCCGGTGGCACCCGTTAACCA

GlyCysThrTrpMetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysVal
121 TCGGTTGTACCTGGATGAACCTCAACTGATTCACCAAGTGTGGGAGCGCTCCTTGTG
AGCCAACATGGACCTACTTGAGTTGACCTAAGTGGTTTCACACGCTCGCGGAGGAACAC

IleGlyGlyAlaGlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisPro
181 TCATCGGAGGGGGCAACACACCTGCACTGCCCACTGATTGCTTCCGCAAGCATC
AGTAGCTCCCGCCCGTTGTTGTGGACGTGACGGGTGACTAACGAAGCGTTCGTAG

AspAlaThrTyrSerArgCysGlySerGlyProTrpLeuThrProArgCysLeuValAsp
241 CGGACGCCACATACTCTGGTGGCTCCGTCCTGGCTCACACCCAGGTGCTGGTCG
GCCGTGGGTGTATGAGAGCCACGCCGAGGCCAGGACCGAGTGTGGTCCACGGACCCAGC

TyrProTyrArgLeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArg
301 ACTACCCGTATAGGCTTTGGCATTTATCCTTGTAACCACTACACCATATTTAAATCA
TGATGGGCATATCCGAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAATTTTAGT

MetTyrValGlyGlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGlu
361 GGATGTACGTGGAGGGTGGAGCACAGGCTGGAAAGCTGCCCTGCACACTGGACGCGGGCG
CCTACATGCACCCCTCCCGAGCTCGTGTCCGACCTTCGACGGACGTTGACCTGCGCCCCCGC

-----Overlap with 12f-----

ArgCysAspLeuGluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThrThr
421 AACGTTGCGATCTGGAAGACAGGACAGGTCCGAGCTCAGCCCCGTTACTGTGACCACTA
TTGCAACGCTAGACCTTCTGTCCCTGTCCAGGCTCGAGTCGGGCAATGACGACTGGTGAT

GlnTrpGlnValLeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeu
481 CACAGTGGCAGGTCCTCCCGTGTCTCCTTCAACAACCTGCCAGCCTTGTCACCGCCCTCA
GTGTCACCGTCCAGGAGGCACAGGAAGTGTGGACGTCGGAACAGGTGGCCGGAGT





FIG. 49

LeuPheTyrHisHisLysPheAsnSerSerGlyCysProGluuArgLeuAlaSerCysArg
1 GCTTTTCTATCACCAAGTTCAACTCTTCAGGCTGCTCCTGAGAGGCTAGCCAGCTGCCG
CGAAAGATAGTGGTGTTCAGTTGAGAAAGTCCGACAGGACTCTCCGATCGGTCGACGGC

ProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTyrAlaAsnGlySerGlyPro
61 ACCCCTTACCGATTTTGACCAAGGCTGGGGCCCTATCAGTTATGCCAACGGAAGCGGCC
TGGGGAATGGCTAAAACTGGTCCCGACCCCGGATAGTCAATACGGTTGCCCTTCGCCGGG

AspGlnArgProTyrCysTrpHisTyrProProLysProCysGlyIleValProAlaLys
121 CGACCAAGCGCCCTACTGCTGGCACTACCCCCCAAAACCTTGCGGTATTGTGCCCGCGAA
GCTGTCGCGGGGATGACGACCGTGATGGGGGGTTTGGAAACGCCCATACACGGCGGCTT

---Overlap with 13i---

SerValCysGlyProValTyrCysPheThrProSerProValValVal
181 GAGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCCCGTGGTGGTGGG
CTCACACACACAGGCCATATAACGAAGTGAGGGTCGGGGCACCACCC



FIG. 50

LeuValMetAlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIleAlaGlyAla
1 TTGGTAATGGCTCAGCTGCTCCGGATCCACAAAGCCATCTTGGACATGATCGCTGGTGCT
AACCATTACCGAGTCGACGAGGCCCTAGGGTGTTCGGTAGAACCTGTACTAGCGACACGA
HisTrpGlyValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrpAlaLysVal
61 CACTGGGAGTCCCTGGCGGCATAGCGTATTCTCTCCATGGTGGGAACCTGGCGAAGGTC
GTGACCCCTCAGGACCGCCCGTATCGCATAAAGAGGTACCAACCCCTTGACCCGCTTCCAG
LeuValValLeuLeuLeuPheAlaGlyValAspAlaGluThrHisValThrGlyGlySer
121 CTGGTAGTGTGCTGCTATTTCGCCGGCGTCGACGCGGAACCCACGTCACCGGGGAAGT
GACCATCAGCAGCAGATAAACGGCCGCGAGCTGGCCCTTTGGGTGCAGTGGCCCCCTTCA
AlaGlyHisThrValSerGlyPheValSerLeuLeuAlaProGlyAlaLysGlnAsnVal
181 GCCGGCCACACTGTGTCTGGATTTGTAGCTCCTCGCACCGCCCAAGCAGAACGTC
CGCCGGGTGTGACACAGACCTAAACAATCGGAGGAGCGTGGTCCGCGGTTCGCTTGCAG
GlnLeuIleAsnThrAsnGlySerTrpHisLeuAsnSerThrAlaLeuAsnCysAsnAsp
241 CAGCTGATCAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACCTGCAATGAT
GTCGACTAGTTGTGGTTGCCGTCAACCGTGGAGTTATCGTGCCGGGACTTGACGTTACTA
SerLeuAsnThrGlyTrpLeuAlaGlyLeuPheTyrHisHisLysPheAsnSerSerGly
301 AGCCTCAACACCGGCTGGTTGGCAGGGCTTTTCTATCACCACAAGTTCAACTCTTCAGGC
TCGGAGTTGTGGCCGACCAACCGTCCCGGAAAGATAGTGGTGTCAAGTTGAGAAGTCCG
-----Overlap with 26j-----
-----Overlap with K9-1-----
CysProGluArgLeuAlaSerCysArgPro
361 TGTCCCTGAGAGGCTAGCCAGCTGCCGACCCC
ACAGGACTCTCCGATCGGTCGACGGCTGGG

FIG. 51

GlnGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArgMetAlaTrpAsp
1CGCAAGGTGCAATTGCTCTATCTATCCCGGCATATAACGGGTACCGCATGGCATGGG
GCGTCCCAACGTTAACGAGATAGATAGGCGCGGTATATTGCCCCAGTGGCGGTACCGTACCC

MetMetMetAsnTrpSerProThrAlaLeuValMetAlaGlnLeuLeuArgIlePro
61ATATGATGATGAACCTGGTCCCCCTACGACGGCGTTGGTAATGGCTCAGCTGCTCCGGATCC
TATACTACTTGACCAAGGGATGCTGCCGCAACCATTACCGAGTCGACGAGGCCCTAGG

GlnAlaIleLeuAspMetIleAlaGlyAlaHisTrpGlyValLeuAlaGlyIleAlaTyr
121CACAAAGCCATCTTGGACATGATCGCTGGTGCTCCTCACTGGGAGTCCTGGCGGCATAGCGT
GTGTTCCGGTAGAACCTGTACTAGCGACCAACGAGTGACCCCTCAGGACCGCCCGTATCGCA

-----Overlap with CA59a-----
PheSerMetValGlyAsnTrpAlaLysValLeuValLeuLeuPheAlaGlyVal
181ATTTCTCCATGTGGGGAACCTGGCGGAAGGTCCTGGTAGTGTCTGCTATTGCCGGCG
TAAAGAGGTACCAACCCCTTGACCCGCTTCCAGGACCATCACGACGACGATAAACGGCCGC

AspAlaGluThrHisValThrGly
241TCGACGCGGAACCCACGTCACCGGG
AGCTGCCGCCCTTGGGTGCAGTGGCCCC



FIG. 52

CysTrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThrGln
1 GTGTTGGTGGCATGACCCCTACGGTGGCCACCAGGATGGCAAACTCCCCGGACGCA
CACAACCCACCGCTACTGGGATGCCACCGGTGTCCTACCGTTTGAGGGCGCTGCGT

LeuArgArgHisIleAspLeuLeuValGlySerAlaThrLeuCysSerAlaLeuTyrVal
61 GCTTCGACGTCACATCGATCTGCTTGTGCGGAGCGCCACCCCTCTGTTCGGCCCTCTACGT
CGAAGCTGCAGTGTAGTAGACGAACAGCCCTCGCGGTGGGAGACAAGCCGGGAGATGCA

GlyAspLeuCysGlySerValPheLeuValGlyGlnLeupheThrPheSerProArgArg
121 GGGGACCTATGCGGCTGTCTTCTTGTGCGGCCAACTGTTACCTTCTCTCCAGGCG
CCCCCTGGATACGCCCCAGACAGAAAGAACAGCCGTTGACAAGTGGAAGAGAGGTCCTCGC

HisTrpThrThrGlnGlyCysAsnCysSerIleTyrProGlyHisIleThrGlyHisArg
181 CCACTGGACGACGCAAGGTTGCCAATTGCTCTATCTATCCGGCCATATAACGGTCAACCG
GGTGACCTGCTGCGTTCCAACGTTAACGAGATAGATAGGGCCGGTATATTGCCCATGTGGC

-----Overlap with CA84a-----
MetAlaTrpAspMetMetMetAsnTrpSerProThrThrAlaLeuValValAlaGlnLeu
241 CATGGCATGGGATATGATGATGAACCTGGTCCCTACGACGGCGTTGGTAGTGCTCAGCT
GTACCGTACCCCTATACTACTACTTGACCAGGGGATGCTGCCCGCAACCATCACCGAGTCGA

LeuArgIleProGlnAla
301 GCTCCGGATCCCAAGCC
CGAGGCCCTAGGTTTCGG



FIG. 53

SerThrGlyLeuTyrHisValThrAsnAspCysProAsnSerSerIleValTyrGluAla
1CTCCACGGGGCTTTACCAAGTACCAATGATTGCCCTAACTCGAGTATTGTGTACGAGGC
GAGTGCCCCGAAATGGTGCCAGTGGTTACTAACGGGATTGAGCTCATAACACATGCTCCG

AlaAspAlaIleLeuHisThrProGlyCysValProCysValArgGluGlyAsnAlaSer
61GGCCGATGCCATCCTGCACACTCCGGGGTGGTCCCTTGCGTTCGTGAGGCAACGCCCTC
CCGGCTACGGTAGGACGTGTAGGCCCCACGAGGAAACGCAAGCACTCCCCGTGCGGAG

ArgCysTrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuProAlaThr
121GAGGTGTTGGTGCGGATGACCCCTACGGTGCGCCACCAGGATGGCAAAC TCCCCGGAC
CTCCACAACCCACCGCTACTGGGGATGCCACCGGTGTCCTACCGTTTGAGGGGGCGCTG

-----Overlap with CA156-----
GlnLeuArgArgHisIleAspLeuLeuValGlySerAlaThrLeuCysSerAlaLeuTyr
181GCAGCTTCGACGTCACATCGATCTGCTTGTGCGGAGCGCTACCTCTGTTCGGCCCTCTA
CGTCGAAGCTGCAGTGTAGCTAGACGAACAGCCCTCGCGATGGGAGACAAGCCGGGAGAT

ValGlyAspLeuCysGlySerValPheLeu
241CGTGGGGGACTTGTGCGGGTCTGTCTTCTTG
GCACCCCTGAACACGCCCCAGACAGAAAGAAC



FIG. 54A

ArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCysGlyPheAlaAspLeuMet
1 AGGTCGCGCAATTTGGGTAAGGTCATCGATACCCCTTACGTGCGGCTTCGCCGACCTCATG
TCCAGCGCGTTAAACCCATTCCAGTAGCTATGGGAATGCACGCCGAAGCGGCTGGAGTAC

GlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAlaArgAlaLeuAlaHisGly
61 GGGTACATACCGCTCGTCGGCGCCCTCTTGGAGGCGCTGCCAGGGCCCTGGCGCATGGC
CCCATGTATGGCGAGCAGCCGCGGGGAGAACCTCCGCGACGGTCCCGGGACCGCGTACCG

ValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsnLeuProGlyCysSerPhe
121 GTCCGGGTTCTGGAAGACGGCGTGAACCTATGCAACAGGGAACCTTCTGGTTGCTCTTTC
CAGGCCCAAGACCTTCTGCCGCACTTGATACGTTGTCCTTGAAGGACCAACGAGAAAG

SerIlePheLeuLeuAlaLeuLeuSerCysLeuThrValProAlaSerAlaTyrGlnVal
181 TCTATCTTCTTCTGGCCCTGCTCTCTTGCTTGACTGTGCCGCTTCGGCCTACCAAGTG
AGATAGAAGGAAGACCGGGACGAGAGAACGAACCTGACACGGGCGAAGCCGGATGGTTAC

ArgAsnSerThrGlyLeuTyrHisValThrAsnAspCysProAsnSerSerIleValTyr
241 CGCAACTCCACGGGGCTTTACCACGTACCAATGATTGCCCTAACTCGAGTATTGTGTAC
GCGTTGAGGTGCCCCGAAATGGTGAGTGTTACTAACGGGATTGAGCTCATAACACATG

GluAlaAlaAspAlaIleLeuHisThrProGlyCysValProCysValArgGluGlyAsn
301 GAGGCGGCCGATGCCATCCTGCACACTCCGGGGTGCGTCCCTTGCGTTGTTGAGGGCAAC
CTCCGCCGGCTACGGTAGGACGTGTGAGGCCCCACGCAGGGAACGCAAGCACTCCCGTTG

AlaSerArgCysTrpValAlaMetThrProThrValAlaThrArgAspGlyLysLeuPro
361 GCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCCCC
CGGAGCTCCACAACCCACCGCTACTGGGGATGCCACCGGTGGTCCCTACCGTTTGAGGGG

AlaThrGlnLeuArgArgHisIleAspLeuLeuValGlySerAlaThrLeuCysSerAla
421 GCGACGCAGCTTCGACGTACATCGATCTGCTTGTCGGGAGCGCCACCCTCTGTTGCGCC
CGCTGCGTCGAAGCTGCAGTGTAGCTAGACGAACAGCCCTCGCGGTGGGAGACAAGCCGG

LeuTyrValGlyAspLeuCysGlySerValPheLeuValGlyGlnLeuPheThrPheSer
481 CTCTACGTGGGGGACCTATGCGGGTCTGTCTTTCTTGTCGGCCAACCTGTTACCTTCTCT
GAGATGCACCCCCTGGATACGCCAGACAGAAAGAACAGCCGGTTGACAAGTGGAAAGAGA

ProArgArgHisTrpThrThrGlnGlyCysAsnCysSerIleTyrProGlyHisIleThr
541 CCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCGGCCATATAACG
GGGTCGCGGTGACCTGCTCCGTTCCAACGTTAACGAGATAGATAGGGCCGGTATATTGC

GlyHisArgMetAlaTrpAspMetMetMetAsnTrpSerProThrThrAlaLeuValMet
601 GGTACCGCATGGCATGGGATATGATGATGAACCTGGTCCCCTACGACGGCGTTGGTAATG
CCAGTGGCGTACCGTACCCTATACTACTACTTGACCAGGGGATGCTGCCGCAACCATTAC

FIG. 54B

661 AlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIleAlaGlyAlaHisTrpGly
 GCTCAGCTGCTCCGGATCCCACAAGCCATCTTGGACATGATCGCTGGTGGTCACTGGGGA
 CGAGTCGACGAGGCCTAGGGTGTTCGGTAGAACCTGTACTAGCGACCACGAGTGACCCCT
 721 ValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrpAlaLysValLeuValVal
 GTCCTGGCGGGCATAGCGTATTTCTCCATGGTGGGGAACCTGGGCGAAGGTCTGGTAGTG
 CAGGACCGCCCGTATCGCATAAAGAGGTACCACCCCTTGACCCGCTTCCAGGACCATCAC
 781 LeuLeuLeuPheAlaGlyValAspAlaGluThrHisValThrGlyGlySerAlaGlyHis
 CTGCTGCTATTTGCCGGCGTCGACGCGGAAACCCACGTACCAGGGGGAAGTGCCGGCCAC
 GACGACGATAAACGGCCGCGAGCTGCGCCTTTGGGTGCAGTGGCCCCCTTACGGCCGGTG
 841 ThrValSerGlyPheValSerLeuLeuAlaProGlyAlaLysGlnAsnValGlnLeuIle
 ACTGTGTCTGGATTGTAGCCTCCTCGACACAGGCGCAAGCAGAACGTCCAGCTGATC
 TGACACAGACCTAAACAATCGGAGGAGCGTGGTCCGCGGTTCTGTCTTGAGGTGCACTAG
 901 AsnThrAsnGlySerTrpHisLeuAsnSerThrAlaLeuAsnCysAsnAspSerLeuAsn
 AACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAAGTCAATGATAGCCTCAAC
 TTGTGGTTGCCGTCAACCGTGGAGTTATCGTGCCGGGACTTGACGTTACTATCGGAGTTG
 961 ThrGlyTrpLeuAlaGlyLeuPheTyrHisHisLysPheAsnSerSerGlyCysProGlu
 ACCGGCTGGTTGGCAGGGCTTTCTATCACCACAAGTTCAACTCTTCAGGCTGTCTGAG
 TGGCCGACCAACCGTCCCGAAAAGATAGTGGTGTTCAGTTGAGAAGTCCGACAGGACTC
 1021 ArgLeuAlaSerCysArgProLeuThrAspPheAspGlnGlyTrpGlyProIleSerTyr
 AGGCTAGCCAGCTGCCGACCCCTTACCGATTTTGACCAGGGCTGGGGCCCTATCAGTTAT
 TCCGATCGGTGACGGCTGGGGAATGGCTAAAACCTGGTCCCGACCCCGGGATAGTCAATA
 1081 AlaAsnGlySerGlyProAspGlnArgProTyrCysTrpHisTyrProProLysProCys
 GCCAACGGAAGCGGGCCCGACGAGCGCCCTACTGCTGGCACTACCCCCAAAACCTTGC
 CGGTTGCCCTTCGCCGGGGCTGGTGCAGGGGATGACGACCGTGATGGGGGGTTTTGGAACG
 1141 GlyIleValProAlaLysSerValCysGlyProValTyrCysPheThrProSerProVal
 GGTATTGTGCCGCGAAGAGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCCGTG
 CCATAACACGGGCGCTTCTCACACACACAGGCCATATAACGAAGTGAGGGTGGGGCAC
 1201 ValValGlyThrThrAspArgSerGlyAlaProThrTyrSerTrpGlyGluAsnAspThr
 GTGGTGGGAACGACGACAGGTGGGGCGCGCCACCTACAGCTGGGGTGAAAATGATACG
 CACACCCCTTGTGGCTGTCCAGCCCGCGCGGGTGGATGTCGACCCCACTTTTACTATGC
 1261 AspValPheValLeuAsnAsnThrArgProProLeuGlyAsnTrpPheGlyCysThrTrp
 GACGCTCTTCGCTTAACAATACCAGGCCACCGCTGGGCAATTGGTTGGTTGTACCTGG
 CTGCAAGACAGGAATTGTTATGGTCCGGTGGCGACCCGTTAACCAAGCCAACATGGACC
 1321 MetAsnSerThrGlyPheThrLysValCysGlyAlaProProCysValIleGlyGlyAla
 ATGAACCTCACTGGATTACCAAGTGTGCGGAGCGCCTCCTTGTGTATCGGAGGGGCG
 TACTTGAGTTGACCTAAGTGGTTTACACGCCTCGCGGAGGAACACAGTAGCCTCCCCGC
 1381 GlyAsnAsnThrLeuHisCysProThrAspCysPheArgLysHisProAspAlaThrTyr
 GGCACAACACCCTGCACTGCCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATAC
 CCGTTGTTGTGGGACGTGACGGGGTGAATAACGAAGGCGTTCTGAGGCTGCGGTGTATG
 1441 SerArgCysGlySerGlyProTrpIleThrProArgCysLeuValAspTyrProTyrArg
 TCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTGGTACTACCGTATAGG
 AGAGCCACGCCGAGGCCAGGGACCTAGTGTGGGTCCACGGACAGCTGATGGGCATATCC
 1501 LeuTrpHisTyrProCysThrIleAsnTyrThrIlePheLysIleArgMetTyrValGly
 CTTTGGCATTATCCTTGTACCATCACTACACCATATTTAAATCAGGATGTACGTGGGA
 GAAACCGTAATAGGAACATGGTAGTTGATGTGGTATAAATTTAGTCTACATGCACCT
 1561 GlyValGluHisArgLeuGluAlaAlaCysAsnTrpThrArgGlyGluArgCysAspLeu
 GGGGTGCAACACAGGCTGGAAGCTGCCTGCAACTGGACGCGGGGCGAACGTTGCGATCTG
 CCCAGCTTGTGTCCGACCTTCGACGGACGTTGACCTGCGCCCCGCTTGCAACGCTAGAC
 1621 GluAspArgAspArgSerGluLeuSerProLeuLeuLeuThrThrThrGlnTrpGlnVal
 GAAGACAGGGACAGGTCCGAGCTCAGCCCGTTACTGCTGACCACTACACAGTGGCAGGTC
 CTTCTGTCCCTGTCCAGGCTCGAGTCGGGCAATGACGACTGGTGTGTGTACCGTCCAG



FIG. 54C

1681 LeuProCysSerPheThrThrLeuProAlaLeuSerThrGlyLeuIleHisLeuHisGln
 CTCCCGTGTTCCTTCCACAACCTACCAGCCTTGTCACCGGCTCATCCACCTCCACCAG
 GAGGGCACAAAGGAAGTGTGGGATGGTCGGAACAGGTGGCCGGAGTAGGTGGAGGTGGTC
 1741 AsnIleValAspValGlnTyrLeuTyrGlyValGlySerSerIleAlaSerTrpAlaIle
 AACATTGTGGACGTGCAGTACTTGTACGGGGTGGGGTCAAGCATCGCGTCTGGGCCATT
 TTGTAACACCTGCACGTGCATGAACATGCCCCACCCAGTTCGTAGCGCAGGACCCGGTAA
 1801 LysTrpGluTyrValValLeuLeuPheLeuLeuAlaAspAlaArgValCysSerCys
 AAGTGGGAGTACGTGCTTCTCTGTTCTCTTCTGCTTGCAGACGCGCGCTGCTGCTCTGC
 TTCACCCCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCGCGCAGACGAGGACG
 1861 LeuTrpMetMetLeuLeuIleSerGlnAlaGluAlaAlaLeuGluAsnLeuValIleLeu
 TTGTGGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGAACCCTCGTAATATT
 AACACCTACTACGATGAGTATAGGGTTCGCTCCGCCGAAACCTCTTGGAGCATTATGAA
 1921 AsnAlaAlaSerLeuAlaGlyThrHisGlyLeuValSerPheLeuValPhePheCysPhe
 AATGCAGCATCCCTGGCCGGGACGCACGGTCTTGTATCCTTCTCGTGTCTCTCTGCTT
 TTACGTCTAGGGACCGGCCCTGCGTGCCAGAACATAGGAAGGAGCACAAAGAACGAA
 1981 AlaTrpTyrLeuLysGlyLysTrpValProGlyAlaValTyrThrPheTyrGlyMetTrp
 GCATGGTATTTGAAGGGTAAGTGGGTGCCCCGAGCGGTCTACACCTTCTACGGGATGTGG
 CGTACCATAAACTTCCCATTCACCCACGGGCTCGCCAGATGTGGAAGATGCCCTACACC
 2041 ProLeuLeuLeuLeuLeuLeuAlaLeuProGlnArgAlaTyrAlaLeuAspThrGluVal
 CCTCTCCTCCTGCTCCTGTTGGCGTTGCCCGAGCGGGCGTACGCGCTGGACACGGAGGTG
 GGAGAGGAGGACGAGGACAACCGCAACGGGGTCCGCCGATGCGCGACCTGTGCTCCAC
 2101 AlaAlaSerCysGlyGlyValValLeuValGlyLeuMetAlaLeuThrLeuSerProTyr
 GCCGCGTCTGTGTGGCGGTGTGTCTCGTGGGTTGATGGCGCTGACTCTGTCCACATAT
 CGGCGCAGCACACCGCCACAACAAGAGCAGCCAACTACCGCGACTGAGACAGTGGTATA
 2161 TyrLysArgTyrIleSerTrpCysLeuTrpTrpLeuGlnTyrPheLeuThrArgValGlu
 TACAAGCGCTATATCAAGTGGTGTGTGGTGGCTTCAGTATTTTCTGACCAGAGTGGAA
 ATGTTCCGCGATATAGTCGACCACGAACACCACCGAAGTCATAAAAGACTGGTCTCACCTT
 2221 AlaGlnLeuHisValTrpIleProProLeuAsnValArgGlyGlyArgAspAlaValIle
 GCGCAACTGCACGTGTGGATTCCCCCCTCAACGTCCGAGGGGGGCGCGACGCCGTATC
 CGCGTTGACGTGCACACCTAAGGGGGGAGTTGCAGGCTCCCCCGCGCTGCGGCGATG
 2281 LeuLeuMetCysAlaValHisProThrLeuValPheAspIleThrLysLeuLeuLeuAla
 TTAATCATGTGTGTGTACACCCGACTCTGGTATTTGACATCACCAAATTGCTGCTGGCC
 AATGAGTACACACGACATGTGGGCTGAGACCATAAACTGTAGTGGTTTAACGACGACCGG
 2341 ValPheGlyProLeuTrpIleLeuGlnAlaSerLeuLeuLysValProTyrPheValArg
 GTCTTCGGACCCCTTTGGATTCTTCAAGCCAGTTTGCTTAAAGTACCCTACTTTGTGCGC
 CAGAAGCCTGGGGAAACCTAAGAAGTTCGGTCAAACGAATTCATGGGATGAAACACGCG
 2401 ValGlnGlyLeuLeuArgPheCysAlaLeuAlaArgLysMetIleGlyGlyHisTyrVal
 GTCCAAGGCCCTTCTCCGGTTCTGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGTG
 CAGGTTCCGGAAGAGGCCAAGACGCGCAATCGCGCCTTCTACTAGCCTCCGGTAATGCAC
 2461 GlnMetValIleIleLysLeuGlyAlaLeuThrGlyThrTyrValTyrAsnHisLeuThr
 CAAATGGTCATCATTAAAGTTAGGGGCGCTTACTGGCACCTATGTTTATAACCATCTCACT
 GTTTACCAAGTAGTAATTCAATCCCCGCGAATGACCGTGGATACAAATATTGGTAGAGTGA
 2521 ProLeuArgAspTrpAlaHisAsnGlyLeuArgAspLeuAlaValAlaValGluProVal
 CCTCTTCGGGACTGGGCGCACAAACCCTTGCAGATCTGGCCGTGGCTGTAGAGCCAGTC
 GGAAGAAGCCCTGACCCGCGTGTGCGGAACGCTCTAGACCGGCACCGACATCTCGGTGAG
 2581 ValPheSerGlnMetGluThrLysLeuIleThrTrpGlyAlaAspThrAlaAlaCysGly
 GTCTTCTCCCAAATGGAGACCAAGCTCATCAGTGGGGGGCAGATACCGCCGCGTGCCTG
 CAGAAGAGGGTTTACCTCTGGTTGAGTAGTGACCCCCCGTCTATGGCGGCGCACGCCA
 2641 AspIleIleAsnGlyLeuProValSerAlaArgArgGlyArgGluIleLeuLeuGlyPro
 GACATCATCAACGGCTTGCCTGTTTCCGCCCCGAGGGGCGGGAGATACTGCTCGGGCCA
 CTGTAGTAGTTGCCGAACGGACAAGGCGGGCGTCCCCGGCCCTCTATGACGAGCCCGGT



FIG. 54D

2701 AlaAspGlyMetValSerLysGlyTrpArgLeuLeuAlaProIleThrAlaTyrAlaGln
 GCCGATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCCATCACGGCGTACGCCCAG
 CGGCTACCTTACCAGAGGTTCCCCACCTCCAACGACCGCGGGTAGTGCCGCATGCGGGTC
 2761 GlnThrArgGlyLeuLeuGlyCysIleIleThrSerLeuThrGlyArgAspLysAsnGln
 CAGACAAGGGGCTCTAGGGTGCATAATCACCAGCCTAACTGGCCGGGACAAAAACCAA
 GTCTGTTCCCCGGAGGATCCACGTATTAGTGGTCGGATTGACCGGCCCTGTTTTTGGTT
 2821 ValGluGlyGluValGlnIleValSerThrAlaAlaGlnThrPheLeuAlaThrCysIle
 GTGGAGGGTGAGGTCCAGATTGTGTCAACTGCTGCCAAACCTTCTGGCAACGTGCATC
 CACCTCCCACTCCAGGTCTAACACAGTTGACGACGGGTTTGGAAAGGACCGTTGCACGTAG
 2881 AsnGlyValCysTrpThrValTyrHisGlyAlaGlyThrArgThrIleAlaSerProLys
 AATGGGGTGCTGGACTGTCTACCACGGGGCCGGAACGAGGACCATCGCGTCACCCAAG
 TTACCCACACGACCTGACAGATGGTGCCCCGGCCTTGCTCCTGGTAGCGCAGTGGGTTC
 2941 GlyProValIleGlnMetTyrThrAsnValAspGlnAspLeuValGlyTrpProAlaPro
 GGTCTGTCTATCCAGATGTATACCAATGTAGACCAAGACCTTGTTGGGCTGGCCCGCTCCG
 CCAGGACAGTAGGTCTACATATGGTTACATCTGGTTCTGGAACACCCGACCGGGCGAGGC
 3001 GlnGlySerArgSerLeuThrProCysThrCysGlySerSerAspLeuTyrLeuValThr
 CAAGGTAGCCGCTCATTGACACCCTGCACTTGCGGCTCCTCGGACCTTTACCTGGTCACG
 GTTCCATCGGCGAGTAACTGTGGGACGTGAACGCCGAGGAGCCTGGAAATGGACCAAGTGC
 3061 ArgHisAlaAspValIleProValArgArgArgGlyAspSerArgGlySerLeuLeuSer
 AGGCACGCGGATGTCTATCCCGTGCGCCGGCGGGGTGATAGCAGGGGCGAGCCTGCTGTCTG
 TCCGTGCGGCTACAGTAAGGGCACGCGGCCGCCCACTATCGTCCCCGTGCGACGACAGC
 3121 ProArgProIleSerTyrLeuLysGlySerSerGlyGlyProLeuLeuCysProAlaGly
 CCCCAGGCCCATTTCTACTTGAAAGGCTCCTCGGGGGGTCCGCTGTTGTGCCCCGCGGGG
 GGGGCCGGGTAAAGGATGAACCTTCCGAGGAGCCCCCAGGCGACAACACGGGGCGCCCC
 3181 HisAlaValGlyIlePheArgAlaAlaValCysThrArgGlyValAlaLysAlaValAsp
 CACGCCGTGGGCATATTTAGGGCCGCGGTGTGCACCCGTGGAGTGCTAAGGCGGTGGAC
 GTGCGGCACCCGTATAAATCCCGGCCACACGTGGGCACCTCACCGATTCCGCCACCTG
 3241 PheIleProValGluAsnLeuGluThrThrMetArgSerProValPheThrAspAsnSer
 TTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTCC
 AAATAGGGACACCTCTTGATCTCTGTTGGTACTCCAGGGGCCACAAGTGCCTATTGAGG
 3301 SerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaProThrGlySer
 TCTCCACCAAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCACAGGCAGC
 AGAGGTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTCG
 3361 GlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysValLeuValLeu
 GGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACTC
 CCGTTTTCTGTGGTTCCAGGGCCGACGTATACGTGAGTCCCGATATTCCACGATCATGAG
 3421 AsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAlaHisGlyIle
 AACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGATC
 TTGGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTAG
 3481 AspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIleThrTyrSer
 GATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTACTCC
 CTAGGATTGTAGTCTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGATGAGG
 3541 ThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAspIleIleIle
 ACCTACGGCAAGTTCTTGCCGACGGCGGGGTGCTCGGGGGGCGCTTATGACATAATAATT
 TGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCAATACTGTATTATTAA
 3601 CysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThrValLeuAsp
 TGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATCGGCACTGTCTTTGAC
 ACCTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAGCCGTGACAGGAACCTG



FIG. 54E

3661 GlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrProProGlySer
 CAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTCC
 GTTCGTCTCTGACGCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCCGAGG
 3721 ValThrValProHisProAsnIleGluGluValAlaLeuSerThrThrGlyGluIlePro
 GTCACGTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCCT
 CAGTGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCTCTCTAGGGA
 3781 PheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeuIlePheCys
 TTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTCATCTTCTGT
 AAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCTCTGTAGAGTAGAAGACA
 3841 HisSerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGlyIleAsnAla
 CATTCAAAGAAGAAGTGCAGCAACTCGCCGAAAGCTGGTCGCATTGGGCATCAATGCC
 GTAAGTTTCTTCTTACGCTGCTTGAGCGGCGTTTCGACCAAGCCTAACCCGTAGTTACGG
 3901 ValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAspValValVal
 GTGGCCTACTACCGCGGTCTTGACGTGTCCGTCTATCCCGACCAAGCGCGATGTTGTCTGTC
 CACCGGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAG
 3961 ValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerValIleAspCys
 GTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGC
 CACCGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACG
 4021 AsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThrIleGluThr
 AATACGTGTGTACCCAGACAGTCTGATTTTACGCCCTTGACCCTACCTTACCATTGAGACA
 TTATGCACACAGTGGGTCTGTGAGCTAAAGTCGGAAGTGGGATGGAAGTGGTAAGTCTGT
 4081 IleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThrGlyArgGly
 ATCAGCTCCCCAGGATGCTGTCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGG
 TAGTGCGAGGGGGTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCTGACCGTCCCCC
 4141 LysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMetPheAspSer
 AAGCCAGGCATCTACAGATTTGTGGCACCAGGGGGAGCGCCCTCCGGCATGTTGCACTCG
 TTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTGAGC
 4201 SerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGlu
 TCCGTCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCCCCGGAG
 AGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCGGGCGGCTC
 4261 ThrThrValArgLeuArgAlaTyrMetAsnThrProGlyLeuProValCysGlnAspHis
 ACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCAT
 TGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACGGTCTGGTA
 4321 LeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSer
 CTTGAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCACTTTCTATCC
 GAACTTAAACCCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAAGATAGG
 4381 GlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCys
 CAGACAAAGCAGAGTGGGGAGAACCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTGC
 GTCTGTTTCTCTACCCCTCTTGGAAAGGAATGGACCATCGCATGGTTCTGGTGGCACACG
 4441 AlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeu
 GCTAGGGCTCAAGCCCCCTCCCCATCGTGGGACCAGATGTGGAAGTGTGTTGATTGCGCTC
 CGATCCCGAGTTCCGGGGAGGGGGTAGCACCTGGTCTACACCTTCAAACTAAGCGGAG
 4501 LysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaValGlnAsnGlu
 AAGCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTGAGAATGAA
 TTCGGGTGGGAGGTACCCGGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACTT
 4561 IleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAlaAspLeuGlu
 ATCACCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTGCGCCGACCTGGAG
 TAGTGGGACTGCGTGGGTCAGTGGTTTATGTAGTACTGTACGTACAGCCGGCTGGACCTC
 4621 ValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCys
 GTCGTACAGGACCTGGGTGCTCGTTGGCGGCGTCTGGCTGCTTTGGCCGCGTATTGC
 CAGCAGTGCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACCGGCGCATAACG



FIG. 54F

4681 LeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLysProAlaIle
 CTGTCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGTCCGGGAAGCCGGCAATC
 GACAGTTGTCCGACGCACCAGTATCACCCGTCGCCAGACAGAACAGGCCCTTCGGCCGTTAG

 4741 IleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCysSerGlnHis
 ATACCTGACAGGGAAGTCCTCTACCGAGAGTTTCGATGAGATGGAAGAGTGCTCTCAGCAC
 TATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTACGAGAGTCTGTG

 4801 LeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGly
 TTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGGC
 AATGGCATGTAGCTCGTTCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCGGGAGCCG

 4861 LeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGlnThrAspTrp
 CTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCTGCTGTCCAGACCAACTGG
 GAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGACGACAGGTCTGGTTGACC

 4921 GlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyr
 CAAAAACTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATAC
 GTTTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTACCCTATGTTATG

 4981 LeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThr
 TTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTACA
 AACCGCCCGAACAGTTGCGACGGAACATTGGGGCGGTAACGAAGTAACACCGAAAATGT

 5041 AlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGly
 GCTGCTGTCAACAGCCCACTAACCACTAGCCAAACCCCTCCTCTTCAACATATTGGGGGGG
 CGACGACAGTGGTGGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATAACCCCCC

 5101 TrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeu
 TGGGTGGCTGCCAGCTCGCCGCCCCCGGTGGCGCTACTGCTTTGTGGGCGTGGCTTA
 ACCCACCACGAGGTCGAGCGGGGGGCGACGCGATGACGGAACACCCGCGACCGAAT

 5161 AlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGly
 GCTGGCGCCGCCATCGGCAGTGTGGACTGGGGAAGGTCTCATAGACATCCTGCGAGGG
 CGACCGCGGGTAGCCGTACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCCC

 5221 TyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGlyGluValPro
 TATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCCC
 ATACCGCGCCGACCCGCCCTCGAGAACACCCGTAAGTTCTAGTACTCGCCACTCCAGGGG

 5281 SerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValVal
 TCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGTC
 AGGTGCCCTCTGGACAGTTAGATGACGGGCGGTAGGAGAGCGGGGCTCGGGAGCATCAG

 5341 GlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGlyAlaValGln
 GCGGTGGTCTGTGCAGCAATACTGCGCGGCGACGTTGGCCCGGGCGAGGGGGCAGTGCA
 CCGCACACAGACAGTCGTTATGACGCGGGCGGTGCAACCGGGGCGGCTCCCCCGTACGTC

 5401 TrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSerProThrHisTyr
 TGGATGAACGGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCCACGCACTAC
 ACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCGTGATG

 5461 ValProGluSerAspAlaAlaAlaArgValThrAlaIleLeuSerSerLeuThrValThr
 GTGCCGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAACC
 CACGGCCTCTCGCTACGTCGACGGGCGCAGTGACGGTATGAGTCGTGCGAGTGACATTGG

 5521 GlnLeuLeuArgArgLeuHisGlnTrpIleSerSerGluCysThrThrProCysSerGly
 CAGCTCCTGAGGCGACTGCACCACTGGATAAGCTCGGAGTGTACCACTCCATGCTCCGGT
 GTCGAGGACTCCGCTGACGTGGTCACTATTGAGCCTCACATGGTGAGGTACGAGGCCA

 5581 SerTrpLeuArgAspIleTrpAspTrpIleCysGluValLeuSerAspPheLysThrTrp
 TCCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGG
 AGGACCGATTCCCTGTAGACCCTGACCTATACGCTCCACAACCTCGCTGAAATTCTGGACC

 5641 LeuLysAlaLysLeuMetProGlnLeuProGlyIleProPheValSerCysGlnArgGly
 CTAAGGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCCTGCCAGCGCGGG
 GATTTTCGATTGAGTACGGTGTGACGGACCCCTAGGGGAAACACAGGACGGTGCAGCCC



FIG. 54G

5701 TyrLysGlyValTrpArgValAspGlyIleMetHisThrArgCysHisCysGlyAlaGlu
 TATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAG
 ATATTCCCCAGACCCTCACCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACTC
 5761 IleThrGlyHisValLysAsnGlyThrMetArgIleValGlyProArgThrCysArgAsn
 ATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCTAGGACCTGCAGGAAC
 TAGTGACCTGTACAGTTTTTGCCTGCTACTCTAGCAGCCAGGATCCTGGACGTCCTTG
 5821 MetTrpSerGlyThrPheProIleAsnAlaTyrThrThrGlyProCysThrProLeuPro
 ATGTGGAGTGGGACCTTCCCCATTAAATGCCTACACCACGGGGCCCTGTACCCCCCTTCCT
 TACACCTCACCTGGAAAGGGTAATTACGGATGTGGTGCCCGGGGACATGGGGGGAAGGA
 5881 AlaProAsnTyrThrPheAlaLeuTrpArgValSerAlaGluGluTyrValGluIleArg
 GCGCCGAACCTACACGTTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAGG
 CGCGGCTTGATGTGCAAGCGCGATACCTCCACAGACGTCTCCTTATACACCTCTATTCC
 5941 GlnValGlyAspPheHisTyrValThrGlyMetThrThrAspAsnLeuLysCysProCys
 CAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCGTGC
 GTCCACCCCCTGAAGGTGATGCACTGCCCATACTGATGACTGTTAGAGTTTACGGGACAG
 6001 GlnValProSerProGluPhePheThrGluLeuAspGlyValArgLeuHisArgPheAla
 CAGGTCCCATCGCCGAATTTTTTACAGAATTGGACGGGGTGGCGCTACATAGGTTTGCG
 GTCCAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAAACGC
 6061 ProProCysLysProLeuLeuArgGluGluValSerPheArgValGlyLeuHisGluTyr
 CCCCCCTGCAAGCCCTTGTCTGCGGGAGGAGGTATCATTGAGAGTAGGACTCCACGAATAC
 GGGGGGACGTTGCGGAACGACGCCCTCCTCCATAGTAAGTCTCATCCTGAGGTGCTTATG
 6121 ProValGlySerGlnLeuProCysGluProGluProAspValAlaValLeuThrSerMet
 CCGGTAGGGTTCGAATTACCTTGCAGAGCCGAACCGGACGTGGCCGTGTTGACGTCCATG
 GGCCATCCAGCGTTAATGGAACGCTCGGGCTTGGCTGCACCGGCACAACCTGCAGGTAC
 6181 LeuThrAspProSerHisIleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySer
 CTCCTGATCCCTCCCATATAACAGCAGAGGCGGCCGGGCGAAGGTTGGCGAGGGGATCA
 GAGTGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCGCTTCCAACCGCTCCCTAGT
 6241 ProProSerValAlaSerSerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThr
 CCCCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAATC
 GGGGGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGTTGA
 6301 CysThrAlaAsnHisAspSerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArg
 TGACCCGCTAACCATGACTCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAGG
 ACGTGCGGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGTTGGAGGATACCTCC
 6361 GlnGluMetGlyGlyAsnIleThrArgValGluSerGluAsnLysValValIleLeuAsp
 CAGGAGATGGGCGGAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGAC
 GTCCTCTACCCGCCGTTGTAGTGGTCCCAACTCAGTCTTTTGTTCACCACTAAGACCTG
 6421 SerPheAspProLeuValAlaGluGluAspGluArgGluIleSerValProAlaGluIle
 TCCTTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCGAGAAATC
 AGGAAGCTAGGCGAACACC6CCTCCTCCTGCTCGCCCTCTAGAGGCATGGGCGTCTTTAG
 6481 LeuArgLysSerArgArgPheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsn
 CTGCGGAAGTCTCGGAGATTGCCCCAGGCCCTGCCCGTTTGGGCGCGGGCCGACTATAAC
 GACGCCTTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAACCCGCGCGGCGCTGATATTG
 6541 ProProLeuValGluThrTrpLysLysProAspTyrGluProProValValHisGlyCys
 CCCCCGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACCACCTGTGGTCCATGGCTGT
 GGGGGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGACACCAAGGTACCGACA
 6601 ProLeuProProProLysSerProProValProProProArgLysLysArgThrValVal
 CGGCTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCCTCGGAAGAAGCGGACGGTGCTC
 GGCAGAGGTGGAGGTTTCAAGGGAGGACACGGAGGCGGAGCCTTCTTCGCTGCCACCAAG
 6661 LeuThrGluSerThrLeuSerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySer
 CTCCTGAATCAACCCTATCTACTGCCTTGGCCGAGCTCGCCACCAGAAAGCTTTGGCAGC
 GAGTGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCGTCG

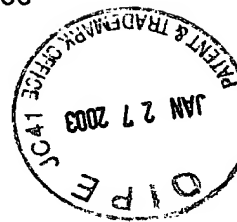


FIG. 54H

6721 SerSerThrSerGlyIleThrGlyAspAsnThrThrThrSerSerGluProAlaProSer
 TCCTCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCGCCCTTCT
 AGGAGTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGAAGA

 6781 GlyCysProProAspSerAspAlaGluSerTyrSerSerMetProProLeuGluGlyGlu
 GGCTGCCCCCGACTCCGACGCTGAGTCCTATTCTCCATGCCCCCCTGGAGGGGGAG
 CCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCCCTC

 6841 ProGlyAspProAspLeuSerAspGlySerTrpSerThrValSerSerGluAlaAsnAla
 CCTGGGGATCCGGATCTTAGCGACGGGTGTCATGGTCAACGGTCAGTAGTGAGGCCAACGCG
 GGACCCCTAGGCCTAGAATCGCTGCCAGTACCAAGTTGCCAGTCATCACTCCGGTTGCGC

 6901 GluAspValValCysCysSerMetSerTyrSerTrpThrGlyAlaLeuValThrProCys
 GAGGATGTCGTGTGCTGCTCAATGCTTACTCTTGGACAGGCGCACTCGTCAACCCGTGC
 CTCCTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGCAGC

 6961 AlaAlaGluGluGlnLysLeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisHis
 GCCGCGGAAGAACAGAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTCAACAC
 CGGCGCCTTCTTGTCTTTGACGGGTAGTTACGTGATTCTGTTGAGCAACGATGCAGTGGTG

 7021 AsnLeuValTyrSerThrThrSerArgSerAlaCysGlnArgGlnLysLysValThrPhe
 AATTTGGTGTATTCCACCACCTCACGCACTGCTTGCCAAAGGCAGAAAGTACATTT
 TTAACACATAAGGTGGTGGAGTGCCTCACGAACGGTTTCCGTCTTCTTTCAGTGATAA

 7081 AspArgLeuGlnValLeuAspSerHisTyrGlnAspValLeuLysGluValLysAlaAla
 GACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAGGTTAAAGCAGCG
 CTGCTGACGTTCAAGACCTGTCGGTAATGGTCCTGCATGAGTTCTCCAATTCGTCGC

 7141 AlaSerLysValLysAlaAsnLeuLeuSerValGluGluAlaCysSerLeuThrProPro
 GCGTCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGACGCTGACGCCCCCA
 CGCAGTTTTCACTTCCGATTGAACGATAGGCATCTCCTTCGAACGTCGGACTGCGGGGGT

 7201 HisSerAlaLysSerLysPheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLys
 CACTCAGCCAAATCCAAGTTTGGTTATGGGGGCAAAAGACGTCCGTTGCCATGCCAGAAAG
 GTGAGTCGGTTTAGGTTCAAACCAATACCCCGTTTTCTGCAGGCAACGGTACGGTCTTTC

 7261 AlaValThrHisIleAsnSerValTrpLysAspLeuLeuGluAspAsnValThrProIle
 GCCGTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACAATGTAAACCAATA
 CGGCATTGGGTGTAGTTGAGGCACACCTTCTGGAAGACCTTCTGTTACATTGTGGTTAT

 7321 AspThrThrIleMetAlaLysAsnGluValPheCysValGlnProGluLysGlyGlyArg
 GACACTACCATCATGGCTAAGAACGAGTTTTCTGCGTTCAACCTGAGAAGGGGGGTGCT
 CTGTGATGGTAGTACCGATTCTTGCTCCAAAGACGCAAGTCGGACTCTTCCCCCAGCA

 7381 LysProAlaArgLeuIleValPheProAspLeuGlyValArgValCysGluLysMetAla
 AAGCCAGCTCGTCTCATCGTGTTCGCCGATCTGGGCGTGCGCGTGTGCGAAAAGATGGCT
 TTCGGTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACACGTTTTCTACCGA

 7441 LeuTyrAspValValThrLysLeuProLeuAlaValMetGlySerSerTyrGlyPheGln
 TTGTACGACGTGGTTACAAAGCTCCCTTGCCGCTGATGGGAAGCTCCTACGGATTCCAA
 AACATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCTTCGAGGATGCCTAAGGTT

 7501 TyrSerProGlyGlnArgValGluPheLeuValGlnAlaTrpLysSerLysLysThrPro
 TACTCACCAGGACAGCGGGTTGAATTCCTCGTGCAAGCGTGGAAAGTCCAAGAAAACCCCA
 ATGAGTGGTCCTGTCGCCCAACTTAAGGAGCACGTTTCGCACCTTCAGGTTCTTTTGGGGT

 7561 MetGlyPheSerTyrAspThrArgCysPheAspSerThrValThrGluSerAspIleArg
 ATGGGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCGT
 TACCCCAAGAGCATACTATGGGCGACGAACTGAGGTGTCACTGACTCTCGCTGTAGGCA

 7621 ThrGluGluAlaIleTyrGlnCysCysAspLeuAspProGlnAlaArgValAlaIleLys
 ACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGCGTGGCCATCAAG
 TGCTCCTCCGTTAGATGTTACAACACTGGAGCTGGGGGTTTCGGGCGCACCGGTAGTTC

 7681 SerLeuThrGluArgLeuTyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCys
 TCCCTCACCAGAGAGGCTTTATGTTGGGGGGCCTCTTACCAATTCAAGGGGGGAGAACTGC
 AGGGAGTGGCTCTCCGAAATACAACCCCGGGGAGAATGGTTAAGTTCCCCCTCTTGACG



FIG. 54I

7741 GlyTyrArgArgCysArgAlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThr
GGCTATCGCAGGTGCCGCGCGAGCGGCGTACTGACAAGTAGCTGTGGTAACACCCTCACT
CCGATAGCGTCCACGGCGCGCTCGCCGCATGACTGTTGATCGACACCATTGTGGGAGTGA

7801 CysTyrIleLysAlaArgAlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeu
TGCTACATCAAGGCCCGGGCAGCCTGTGAGCCGCAGGGCTCCAGGACTGCACCATGCTC
ACGATGTAGTTCCGGGCCCGTCCGACAGCTCGGCGTCCCGAGGTCTTGACGTGGTACGAG

7861 ValCysGlyAspAspLeuValValIleCysGluSerAlaGlyValGlnGluAspAlaAla
GTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGCG
CACACACCCTGCTGAATCAGCAATAGACACTTTCGCGCCCCCAGGTCTCTGCGCCGCG

7921 SerLeuArgAlaPheThrGluAlaMetThrArgTyrSerAlaProProGlyAspProPro
AGCCTGAGAGCCTTACGGAGGGCTATGACCAGGTACTCCGCCCCCCTGGGGACCCCCCA
TCGGACTCTCGGAAGTGCCTCCGATACTGGTCCATGAGGCGGGGGGACCCCTGGGGGGT

7981 GlnProGluTyrAspLeuGluLeuIleThrSerCysSerSerAsnValSerValAlaHis
CAACCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCCAACGTGTGAGTCGCCCCAC
GTTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGTG

8041 AspGlyAlaGlyLysArgValTyrTyrLeuThrArgAspProThrThrProLeuAlaArg
GACGGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCTACAACCCCCCTCGCGAGA
CTGCCGCGACCTTCTCCCAGATGATGGAGTGGGCACTGGGATGTTGGGGGGAGCGCTCT

8101 AlaAlaTrpGluThrAlaArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMet
GCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCATG
CGACGCACCCTCTGTCGTTCTGTGTGAGGTCAGTTAAGGACCGATCCGTTGTATTAGTAC

8161 PheAlaProThrLeuTrpAlaArgMetIleLeuMetThrHisPhePheSerValLeuIle
TTTGCCCCCAGCTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCCTTATA
AAACGGGGGTGTGACACCCGCTCCTACTATGACTACTGGGTAAAGAAATCGCAGGAATAT

8221 AlaArgAspGlnLeuGluGlnAlaLeuAspCysGluIleTyrGlyAlaCysTyrSerIle
GCCAGGGACCAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCATA
CGGTCCCTGGTCGAACCTTGTCGGGAGCTAACGCTCTAGATGCCCCGGACGATGAGGTAT

8281 GluProLeuAspLeuProProIleIleGlnArgLeu
GAACCACTTGATCTACCTCCAATCATTCAAAGACTC
CTTGGTGAAGTAGATGGAGGTTAGTAAGTTTCTGAG



FIG. 55A

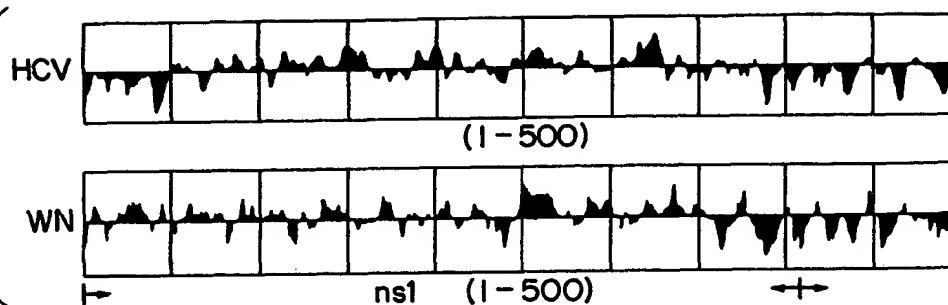


FIG. 55B

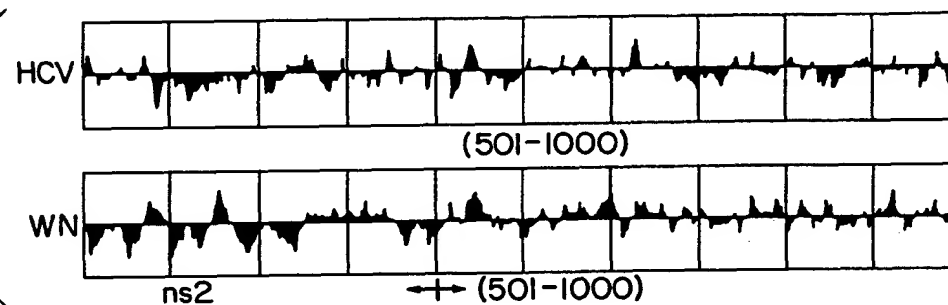


FIG. 55C

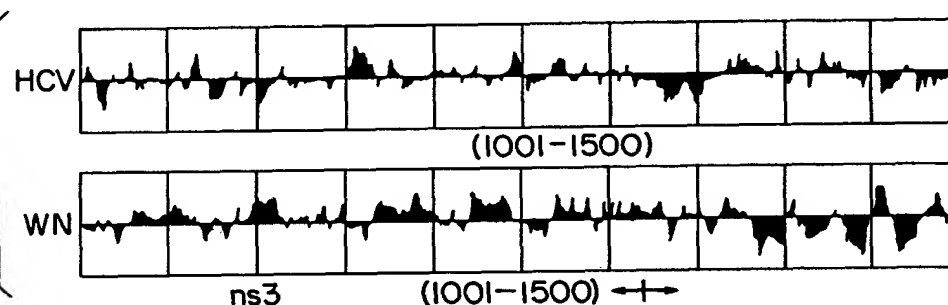


FIG. 55D

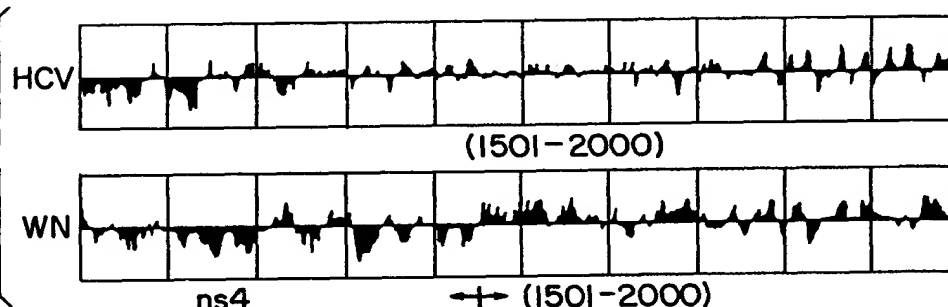


FIG. 55E

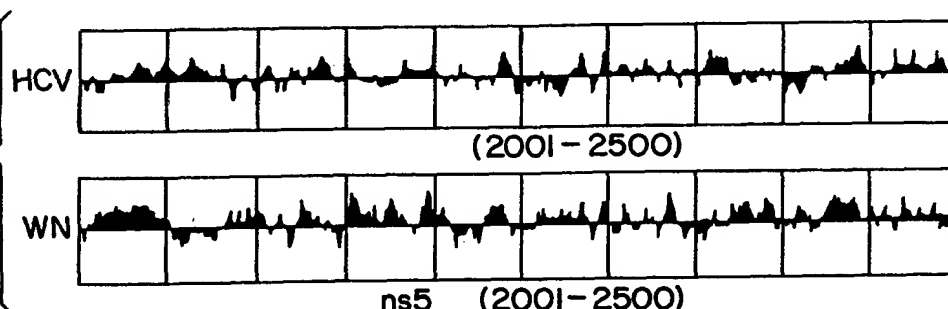


FIG. 56

ArgArgArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCysGlyPheAlaAsp
 1 CCGGCGTAGGTCGGCAATTGGTAAGGTCATCGATACCCTTACGTGGGCTTCGCCG
 GGGCCGATCCAGCGCGTTAAACCCATTCCAGTAGCTATGGGAATGCACGCCCAAGCGGC

LeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAlaArgAlaLeuAla
 61 ACCTCATGGGTACATACCGCTCGTCGGCGCCCTCTTTGGAGCGCTGCCAGGCCCTGG
 TGGAGTACCCCATGTATGGCAGCAGCCGCGGAGAACCTCCGCGACGGTCCCGGGACC

HisGlyValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsnLeuProGlyCys
 121 CGCATGGCGTCCGGTTCTGGAGACGGCGTGAACCTATGCAACAGGGAACCTTCCTGGTT
 GCGTACCGCAGGCCCAAGACCTTCTGCCGCACTTGATACGTTGTCCTTGGAAAGGACCAA

SerPheSerIlePheLeuLeuAlaLeuLeuSerCysLeuThrValProAlaSerAlaTyr
 181 GCTCTTCTCTATCTTCTTCTGCGCCCTGCTCTTCTTGTGCTGACTGTGCCGCTTCGGCCT
 CGAGAAAGAGATAGAAAGAACCGGACGAGAGAACGAACTGACACGGCGCAAGCCGGA

GlnValArgAsnSerThrGlyLeuTyrHisValThrAsnAspCysProAsnSerSerIle
 241 ACCAAGTCCGCAACTCCACGGGCTTTACCACGTCACCAATGATGCCCTAACTCGAGTA
 TGGTTCACGCGTTGAGGTGCCCCGAAATGGTGCAGTGGTTACTAACGGGATTGAGCTCAT

-----overlap with CAL67b-----

ValTyrGluAlaAlaAspAlaIleLeuHisThrProGlyCysValProCysValArgGlu
 301 TTGTGTACGAAGCGCCGATGCCATCCTGCACACTCCGGGGTGGCTCCCTTGGCTTCGTG
 AACACATGCTTCGCCGCTACGGTAGGACGTGTGAGGCCCCACGCAGGGAACGCAAGCAC

GlyAsnAlaSerArgCysTrpValAlaMetThrProThrValAla
 361 AGGGCAACGCCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCC
 TCCCGTTGCGGAGCTCCACAACCCACCGCTACTGGGGATGCCACCGG





1 LysLysAsnLysArgAsnThrAsnArgArgProGlnAspValLysPheProGlyGly
1 AAAAAAAAAAACCAACCTAACACCAACCGTCGCCACAGACGTCAGTTCGCCGGTGGC
TTTTTTTTTTGTTGTCATGTGTGGCAGCGGGTGCTCGAGTTCAAGGCCACCCG
61 GlnIleValGlyGlyValTyrLeuLeuProArgArgGlyProArgLeuGlyValArgAla
GTCAGATCGTTGGTGGAGTTTACTTGTGTCCGCCAGGGCCCTAGATTGGGTGCGG
CAGCTTAGCAACCACTCAAAATGAACAACGGCGGCTCCCGGATCTAACCCACACGGC
121 ThrArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnProIleProLysAla
CGACGAGAAAGACTTCCGAGCGGTCCGAACCTCGAGGTAGACGCCAGCTATCCCAAG
GCTGCTCTTCTGAAGCTCGCCAGCGTTGGAGCTCCATCTGCGGTCCGATAGGGTTCC
181 ArgArgProGluGlyArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrGlyAsn
CTCGTCGCCCGAGGCGAGACCTGGGCTCAGCCCGGTTACCTTGCCCCCTATGGCA
GAGCAGCCGGGCTCCGCTCGACCCGAGTCGGGCCCATGGGAACCGGGAGATACCGT
241 GluGlyCysGlyTrpAlaGlyTrpLeuLeuSerProArgGlySerArgProSerTrpGly
ATGAGGCTGCGGGTGGCGGGATGGCTCTCTCCCGTGGCTCTCGGCTAGCTGG
TACTCCCGACGCCACCGCTTACCAGAGACAGAGGGGCAACCGAGCCGATCGAACC

301 ProThrAspProArgArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCys
GCCCCACAGACCCCGCGGTAGCTCGGCAATTGGGTAAGTCAATGATACCTTACGT
CGGGGTCTTGGGGCGCATCCAGCGCGTTAAACCAATCCAGTAGCTATGGGAATGCA

361 GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAla
GCGGCTTCGCCGACCTCATGGGGTACATACCGCTCGTCGGCGCCCTTGAGCGCTG
CGCCGAAGCGGCTGGAGTACCCCATGTATGGCAGACCGCGGGGAGAACCTCCGGCAG

421 ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsn
CCAGGGCCCTGGCGCATGGCGTCCGGTCTGGAAGACGGCGTGAATGCAACAGGCA
GGTCCCGGACCGCGTACCGCAGGCCCAAGACCTTCTGCGCAGCTTGATACGTTGTCCCT

481 LeuProGlyCysSerPheSerThrPhe
ACCTTCCTGGTGTCTTCTCTACCTTC
TGGAAGGACCAACGAGAAAGAGATGGAAG

FIG. 57

FIG. 58A

#MetSerValGlnProProGlyProProLeu

#MetAlaLeuValOP

1 CGCAGAAAGCGTCTAGCCCATGGCGTTAGTATGAGTGTGCGTGACGCCCTCCAGGACCCCC
GCGTCTTTCGACATCGGTACCGCAATCATCTACAGACACGTCGGAGGTCCTGGGGGG

ProGlyGluProAM

61 TCCCGGAGAGCCATAGTGGTCTGCGGAACCGGTGAGTACACCGGAATTGCCAGGACGAC
AGGGCCCTCTCGGTATCACACGACGCCCTTGCCACTCATGTGGCCTTAACGGTCTGCTG

#MetProGlyAspLeuGlyValProProGlnAsp

121 CGGCTCCTTCTTGATCAACCCGCTCATGCGCTGAGATTGGCGTGCCCCCGCAAGA
GCCCAGGAAGAACCTAGTTGGCGAGTTACGGACCTCTAAACCGCACGGGGCGTTCT

CysAM

OP AM GlyAlaCys
*

181 CTGCTAGCCCGAGTAGTGTGGGTCCGGAAGGCCCTTGTTGTTACTGCCCTGATAGGGTGCTT
GACGATCGGCTCATCAACCAAGCGCTTTCGGGAACCATGACGACTATCCACGAA

GluCysProGlyArgSerArgArgProCysThrMetSerThrAsnProLysProGlnLys



FIG. 58B

241

CGCAGTCCCCCGGAGGTCCTCGTAGACCGGTGCACCATGAGCACCGAATCCTAAACCTCAA
CGCTCACGGGGCCCTCCAGAGCATCTGGCAGCTGGTACTCGTCTTAGGATTGGAGTTT

LysAsnLysArgAsnThrAsnArgArgProGlnAspValLysPheProGlyGlyGln

301

AAAAAACAACGTAACACCAACCGTCGCCACAGAGCGTCAAGTTCCCGGTGGCGGTC
TTTTTTGTTTGCATTGTGTTGGCAGCGGGTGTCTCGAGTTCAAGGCCACCGCCAG

IleValGlyGlyValTyrLeuLeuProArgArgGlyProArgLeuGlyValArgAlaThr

361

AGATCGTTGGTGAGTTTACTTGTGCCCGCAGGGGCCCTAGATTGGGTGCGCGCGA
TCTAGCAACCACTCAAAATGAACAACGGCGGTCGCCGGATCTAACCCACACGCGCGCT

ArgLysThrSerGluArgSerGlnProArgGlyArgArgGlnProIleProLysAlaArg

421

CGAGAAAGACTTCCGAGCGGTCCCAACCTCGAGGTAGACGTCAGCCTATCCCAAGGCTC
GCTCTTTCTGAAGGCTCGCCAGCGTTGGAGCTCCATCTGCAGTCGGATAGGGGTTCCGAG

ArgProGluGlyArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrGlyAsnGlu





481

-----overlap with CA290a-----
GTCCGCCCCGAGGCGCAGGACCTGGGCTCAGCCCGGTACCCTTGCCCTATGGCAATG
CAGCCGGGCTCCCGTCCCTGGACCCGAGTCGGGCCCATGGGAACCGGGAGATACCGTTAC

GlyCysGlyTrpAlaGlyTrpLeuLeuSerProArgGlySerArgProSerTrpGlyPro

541

AGGCTGCGGGTGCGCGGATGCTCCTGTCTCCCGTGCTCTCGGCTAGCTGGGGCC
TCCCGACGCCACCCGCCCTACCGAGGACAGAGGGCACCGAGAGCCGGATCGACCCCGG

ThrAspProArgArgArgSerArgAsnLeuGlyLysValIleAspThrLeuThrCysGly

601

CCACAGACCCCCCGCGTAGGTCCGCCAATTGGGTAAGGTATCGATACCTTACGTGCG
GGTGCTGGGGCCGCATCCAGCGCGTTAAACCATTCACGTAGCTATGGGAATGCACGC

Phe

661

GCTTC
CGAAG

* = Start of long HCV ORF
| = Putative first amino acid of large HCV polyprotein
= Putative small encoded peptides (that may play a translational regulatory role)

FIG. 58C

FIG. 59

1 ValLeuGlyArgGluArgProCysGlyThrAlaOP AM GlyAlaCysGluCysProGly
GTCCTGGGTCGCGAAAGCCCTTGTTGTTACTGCCCTGATAGGCTGCTTGGAGTCCCCGGG
CAGAACCCAGCGCTTCCGGAACACCATGACGGACTATCCACGAACGCTCACGGGGCCC

*

61 ArgSerArgArgProCysThrMetSerThrAsnProLysProGlnArgLysThrLysArg
AGGTCCTCGTAGACCGTGCACCATGAGCACGAATCCCTAAACCTCAAGAAAAACCAACGT
TCCAGAGCATCTGGCACGTGTTACTCGTGTCTTAGGATTGGAGTTTCTTTTGGTTGCA

121 AsnThrAsnArgArgProGlnAspValLysPheProGlyGlyGlnIleValGlyGly
AACACCAACCGTCGCCACAGACGTCAAGTTCGCCGGTGGCGGTCAGATCGTTGGTGGA
TTGTGGTTGGCAGCGGGTGTCTCTCAGTTCAAGGGCCACCGCCAGTCTAGCAACCACT

181 ValTyrLeuLeuProArgArgGlyProArgLeuGlyValArgAlaThrArgLysThrSer
GTTTACTGTGTGCCCGCAGGGCCCTAGATTGGGTGTGCCGCGACGAGAAAGACTTCC
CAAAATGAACAACGGCGCGTCCCGGGATCTAACCCACACGCGCGCTGCTTCTGAAGG

-----overlap with CA290a-----

241 GluArgSerGlnProArgGlyArgArgGlnProIleProLysAlaArgArgProGluGly
GAGCGGTGCAACCTCGAGGTAGACGTCAGCCTATCCCAAGGCTCGTCCGCCGAGGGC
CTCGCCAGCGTTGGAGCTCCATCTGCAGTCGGATAGGGGTCCGAGCAGCGGGCTCCCG

301 ArgThrTrpAlaGlnProGlyTyrProTrpProLeuTyrGlyAsnGluGlyCys
AGGACCTGGGCTCAGCCCGGTACCCCTTGCCCCCTATGCAATGAGGGCTGCG
TCCTGGACCCGAGTCCGGGCCCATGGGAACCGGGGAGATACCGTTACTCCCGACGC

* = putative initiator methionine codon



FIG. 60

```

#ProProOP
#SerThrMetAsnHisSerProValArgAsnTyrCysLeuHisAlaGluSerValAM
1 #LeuHisHisGluSerLeuProCysGluGluLeuLeuSerSerArgArgLysArgLeuAla
CTCCACCATGATCATCTCCCTGTGAGGAACACTACTGCTTCACCGCAGAAAGCGTACGCC
GAGGTGTTACTTAGTGAGGGGACACTCCTTGATGACAGAAAGTGGCTTTTCGCAGATCGG

-----
#MetSerValValGlnProProGlyProProLeuProGlyGluProAM
61 MetAlaLeuValOP
ATGGCGTTAGTATGAGTGTGCTGCAGCCCTCCAGAGACCCCCCTCCCGGAGAGCCATAGT
TACCGCAATCATACTACACAGCACGTCGGAGGTCCTGGGGGGAGGGCCCTCTCGGTATCA

-----
121 GGTCTGCGGAACCGGTGAGTACACCGGAATTGCCAGAGACGACCGGGTCTTCTTGATC
CCAGACGCCCTTGGCCACTCATGTGGCTTAACGGTCTGCTGCGCCAGGAAAGAACCTAG
-----
overlap with ag30a-----

#MetProGlyAspLeuGlyValProProGlnAspCysAM
181 AACCCGCTCATATGCCCTGGAGATTGGGCGTGCCCGCAGACTGCTAGCCGAGTAGTGT
TTGGCGGAGTTACGGACCTCTAAACCCGACGCGGGCGTTCTGACGATCGGCTCATCACA

-----
241 TGGGTCCGGAAGGCCCTTGTGTACTGCTGCTGATAGGGTGTGCTTGCAGAGTGCCCGGAGGT
ACCCAGCGCTTTCGGAACACCATGACGGAATATCCACGAAAGCTCACGGGGCCCTCCA

-----
301 ArgArg      * = Start of long HCV ORF
CTCGTAGA      # = Putative small encoded peptides (that may
GAGCATCT      play a translational regulatory role)

```



FIG. 61

-----Overlap with 15e -----

1 GlyAlaCysTyrSerIleGluProLeuAspLeuProIleIleGlnArgLeuHisGly
 1 GGGGCTGCTACTCCATAGAACCACTGGATCTACTCCATCATTCACAAGACTCCATGGC
 CCCCAGCATGAGGTATCTTGGTGACCTAGATGAGGTTAGTAAGTTTCTGAGGTACCC

61 LeuSerAlaPheSerLeuHisSerTyrSerProGlyGluIleAsnArgValAlaAlaCys
 CTCAGCCGATTTTCACCTCCACAGTTACTCTCCAGGTGAATTAATAGGGTGGCCGATGC
 GAGTCGCGTAAAGTGAGGTGTCAATGAGAGGTCCACTTTAATTATCCACCGCGTACG

Gly*
 G

121 LeuArgLysLeuGlyValProProLeuArgAlaTyrPargHisArgAlaArgSerValArg
 CTCAGAAACTTGGGGTACCGCCCTTGCGAGCTTGAGACACCGGCCCGAGCGTCCGC
 GAGTCTTTTGAAACCCCATGGCGGGAACGCTCGAACCTCTGTGGCCCGGCTCGAGCGC

181 AlaArgLeuLeuAlaArgGlyGlyArgAlaAlaIleCysGlyLysTyrLeuPheAsnTyr
 GCTAGGCTTCTGGCCAGAGGAGGCGCTGCCATATGTGGCAAGTACCCTTCAACTGG
 CGATCCGAAGACCGGTCTCTCCGTCCCGACGGTATACACCGTTTCATGGAGAAGTTGACC

AlaValArgThrLysLeuLys
 241 GCAGTAAGAACAAAGCTCAAAC
 CGTCATTCCTTGTTCGAGTTTG

* = nucleotide heterogeneity



FIG. 62A

CACTCCACCATGAATCACTCCCCTGTGAGGAACTACTGTCTTCACGCAGAAAGCGTCTAG
CCATGGCGTTAGTATGAGTGTCTGTCAGCCTCCAGGACCCCCCTCCCGGGAGAGCCATA
GTGGTCTGCGGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCTTTCTTGGG
TCAACCCGCTCAATGCCTGGAGATTTGGGCGTGCCCCGCAAGACTGCTAGCCGAGTAGT
GTTGGGTGCGGAAAGGCCTTGTGGTACTGCTGATAGGGTGCTTGCAGTGCCCCGGGAG-300

---(Putative initiator methionine codon)

GTCTCGTAGACCGTGCACCATGAGCACGAATCCTAAACCTCAAAAAAAAAACAAACGTAA
CACCAACCGTGCAGGACGTCAGTTCCCGGGTGGCGGTGAGATCGTTGGTGGAGT
TTACTTGTGTCGCGCAGGGGCCCTAGATTGGGTGTGCGCGGACGAGAAAGACTTCCGA
GCGGTGCGAACCTCGAGGTAGACGTACGCTATCCCCAAGGCTCGTGGCCCCGAGGGCAG
GACCTGGGCTCAGCCCCGGGTACCTTGGCCCCCTCTATGGCAATGAGGGGTGCGGGTGGGC-600
GGGATGGCTCCTGTCTCCCCGTGGCTCTCGGCCCTAGCTGGGGCCCCACAGACCCCCGGCG
TAGGTGCGCAATTTGGGTAAAGGTATCGATACCTTACGTGCGGCTTTCGCCGACCTCAT
GGGGTACATACCGTCTGTCGGCGCCCCCTTTGGAGGCGCTGCCAGGGCCCTGGCGCATGG
CGTCCGGGTTCTGGAAGACGGCGTGAACATATGCAACAGGGAACCTTCTGTTGCTCTTT
CTCTATCTTCTTCTGCCCCCTGCTCTTGTGCTTACTGTGCCCGCTTCGGCCTACCAAGT-900
GCGCAACTCCACGGGGCTTTACCACGTACCAATGATTGCCCTAACTCGAGTATTGTGTA
CGAGGCGGGCGATGCCATCCTGCACACTCCGGGGTGGCGTCCCTTGCCTTCGTGAGGGCAA
CGCTTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCC
CGGACGCGAGCTTCGACGTACATCGATCTGCTTGTGCGGAGCGCCACCCTCTGTTCCGGC
CCTCTACGTGGGGGACCTATGCGGGTCTGTCTTTCTTGTGCGGCAACTGTTCACTTCTC-1200
TCCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCGGCCATATAAC
GGGTACCCGCATGGCATGGGATATGATGATGAACCTGGTCCCCTACGACGGCGTTGGTAAT
GGCTCAGCTGCTCCGGATCCCAAGCCATCTTGGACATGATCGCTGGTGCTCACTGGGG
AGTCTGCGGGGATAGCGTATTTCTCCATGGTGGGGAACCTGGGCGAAGGTCTGGTAGT
GCTGCTGCTATTTGCCGGCGTGCAGCGCGGAAACCCACGTACCGGGGGAAGTCCCGGCCA-1500
CACTGTGTCTGGATTTGTTAGCCTCCTCGACCAAGGCGCCAAAGCAGAACGTCCAGCTGAT
CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACCTGCAATGATAGCCTCAA
CACCGGCTGGTTGGCAGGGCTTTTCTATCACCACAAGTTCAACTCTTCAGGCTGTCCTGA
GAGGCTAGCCAGCTGCCGACCCCTTACCGATTTTGACCAAGGGCTGGGGCCCTATCAGTTA
TGCCAACGGAAGCGGCCCGACCGCCCTACTGCTGGCACTACCCCCAAAACCTTG-1800
CGGTATTGTGCCCCGCGAAGAGTGTGTGGTCCGGTATATTGCTTCACTCCAGCCCGGT
GGTGGTGGGAACGACCGACAGGTGCGGCGCGCCACCTACAGCTGGGGTGAAAATGATAC
GGACGTCTTCGTCTTAACAATACCAGGCCACCGCTGGGCAATTGGTTCGGTTGTACCTG
GATGAACCTCAACTGGATTACCAAAGTGTGCGGAGCGCCTCTTGTGTATCGGAGGGGC
GGGCAACAACACCTGCACTGCCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATA-2100
CTCTCGGTGCGGCTCCGCTCCCTGGATCACACCAAGTGCTGGTGGTCACTACCCGTATAG
GCTTTGGCATTATCCTTGTACCATCAACTACACCATATTTAAAATCAGGATGTACGTGGG
AGGGGTGGAACACAGGCTGGAAGCTGCCTGCAACTGGACGCGGGGCGAACGTTGCGATCT
GGAAGACAGGGACAGGTCCGAGCTCAGCCCGTTACTGCTGACCACTACACAGTGGCAGGT
CCTCCCGTGTTCCTTCAACAACCTACAGCCTTGTCCACCGGCCTCATCCACCTCCACCA-2400
GAACATTGTGGACGTGCAGTACTTGTACGGGGTGGGGTCAAGCATCGCGTCTGGGCCAT
TAACGGGAGTACGTGCTTCTCTCTTCTGCTTCTGCTTGCAGACGCGCGCTCTGCTCTG
CTTGTGGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGAACCCTCGTAATACT
TAATGCAGCATCCCTGGCCGGGACGCACGGTCTTGTATCCTTCTCGTGTCTTCTGCTT
TGATGGTATTTGAAGGGTAAGTGGGTGCCCGGAGCGGTCTACACCTTCTACGGGATGTG-2700
GCCTCTCCTCCTGCTCTGTTGGCGTTGCCCGAGCGGGCGTACGCGCTGGACACGGAGGT
GGCCGCGTCTGTGGCGGTGTTGTTCTCGTGGGTTGATGGCGCTGACTCTGTACCCATA
TTACAAGCGCTATATCAGTGGTGGTGGTGGCTTCAGTATTTTCTGACCAAGAGTGG
AGCGCAACTGCACGTGTGGATTCCCCCCTCAACGTCCGAGGGGGGCGGACGCCGTCTAT
CTTACTCATGTGTGCTGTACACCCGACTCTGGTATTTGACATACCAAATTGCTGCTGGC-3000
CGTCTTCGGACCCCTTTGGATTCTTCAAGCCAGTTTGTAAAGTACCCTACTTTGTGCG
CGTCCAAGGCCTTCTCCGGTTCTGCGGTTAGCGCGGAAGATGATCGGAGGCCATTACGT
GCAAATGGTCATCATTAAAGTTAGGGGCGCTTACTGGCACCTATGTTTATAACCATCTCAC
TCTCTTCGGGACTGGGCGCACAAACGGCTTGCAGATCTGGCGTGGCTGTAGAGCCAGT
CGTCTTCTCCCAAATGGAGACCAAGCTCATACGTGGGGGCGAGATACCGCCGCGTGGG-3300
TGACATCATCAACGGCTTGCCTGTTTCCGCCCCGAGGGGCGGGAGATACTGCTCGGGCC
AGCCGATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCATCACGGCGTACGCCCA
GCAGACAAGGGGCTCCTAGGGTGCATAATCACCAGCCTAACTGGCCGGGACAAAAACCA
AGTGGAGGGTGAGGTCCAGATTGTGTCAACTGCTGCCCAAACCTTCTGGCAACGTGCAT



FIG. 62B

CAATGGGGTGTGCTGGACTGTCTACCACGGGGCCGGAACGAGGACCATCGCGTCACCCAA-3600
GGGTCTGTGTCATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCC
GCAAGGTAGCCGCTCATTGACACCCTGCACTTGGGGCTCCTCGGACCTTTACCTGGTCAC
GAGGCACGCCGATGTCATTCCCGTGCGCCGGCGGGGTGATAGCAGGGGCAGCCTGCTGTC
GCCCCGGCCCATTTCTACTTGAAGGCTCCTCGGGGGGTCCGCTGTTGTGCCCGCGGG
GCACGCCGTGGGCATATTTAGGGCCGCGGTGTGCACCCGTGGAGTGGCTAAGGCGGTGGA-3900
CTTTATCCCTGTGGAGAACCCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAAATC
CTCTCCACCAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCACAGGCAG
CGGCAAAAGCACCAAGGTCCCGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
CAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGTACATGTCCAAGGCTCATGGGAT
CGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTACTC-4200
CACCTACGGCAAGTTCTTGGCGACGGCGGGTGCTCGGGGGGCGCTTATGACATAATAAT
TTGTGACGAGTGGCACTCCACGGATGCCACATCCATCTTGGGCATCGGCACCTGTCCTTGA
CCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTC
CGTCACTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCC
TTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTTCTG-4500
TCATTCAAAGAAGAAGTGCAGCAACTCGCCGCAAGCTGGTCGCAATTGGGCATCAATGC
CGTGGCCTACTACCGCGGTCTTGACGTGTCCGTATCCCGACCAGCGGCGATGTTGTGCT
CGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTG
CAATACGTGTGTCACCCAGACAGTCGATTTACGCTTGACCCTACCTTCACCATTGAGAC
AATCACGCTCCCCAGGATGCTGTCTCCCGCACTCAACGTGGGGCAGGACTGGCAGGGG-4800
GAAGCCAGGCATCTACAGATTTGTGGCACCAGGGGAGCGCCCTCCGGCATGTTGCACTC
GTCCGTCTCTGTGAGTGTATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCCGCCGA
GACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCA
TCTTGAATTTTGGGAGGGCGTCTTTACAGGCTCACTCATATAGATGCCCACTTTCTATC
CCAGACAAAGCAGAGTGGGGAGAACCCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTG-5100
CGCTAGGGCTCAAGCCCCTCCCCATCGTGGGACCAGATGTGGAAGTGTGTTGATTGCGCT
CAAGCCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTGAGAAATGA
AATCACCCCTGACGCACCCAGTCACCAATACATCATGACATGCATGTCGGCCGACCTGGA
GGTCGTCACGAGCACCTGGGTGCTCGTTGGCGGCGTCTGGCTGCTTTGGCGCGTATTG
CCTGTCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGTCCGGGAAGCCGGCAAT-5400
CATACCTGACAGGGGAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTACGA
CTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGG
CCTCCTGACAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCTGCTGTCCAGACCAACTG
GCAAAAACCTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATA
CTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTAC-5700
AGCTGCTGTACACAGCCCACTAACCCTAGCCAAACCCCTCCTTTCAACATATTGGGGGG
GTGGGTGGCTGCCCAGCTCGCCGCCCCCGGTGCCGCTACTGCCTTTGTGGGCGCTGGCTT
AGCTGGCGCCGCCATCGGCAGTGTGGACTGGGGAAGGTCTCATAGACATCCTTGCAGG
GTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCC
CTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGT-6000
CGGCGTGGTCTGTGACGAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCA
GTGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCCACGCACTA
CGTGGCGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAAC
CCAGCTCCTGAGGCGACTGCACCAAGTGGATAAGCTCGGAGTGTACCACTCCATGCTCCGG
TTCCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTG-6300



FIG. 62C

GCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCCTGCCAGCGCGG
GTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
GATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCCTAGGACCTGCAGGAA
CATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCCTGTACCCCCCTTCC
TGCGCCGAACCTACACGTTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAG-6600
GCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCGTG
CCAGGTCCCATCGCCCGAATTTTTACAGAATTGGACGGGGTGCCTACATAGGTTTGC
GCCCCCTGCAAGCCCTTGTGCGGGAGGAGGTATCATTGAGAGTAGGACTCCACGAATA
CCCGGTAGGGTTCGAATTACCTTGCAGGCCCGAACCAGGACGTGGCCGTGTTGACGTCCAT
GCTCACTGATCCCTCCCATAAACAGCAGAGGGCGGCCGGGCGAAGGTTGGCGAGGGGATC-6900
ACCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAAC
TTGCACCGCTAACCATGACTCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAG
GCAGGAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGA
CTCCTTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAAAT
CCTGCGGAAGTCTCGGAGATTGCGCCAGGCCCTGCCCCGTTTGGGCGCGGCCGGACTATAA-7200
CCCCCGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACCACCTGTGGTCCATGGCTG
TCCGCTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCTCGGAAGAAGCGGACGGTGGT
CCTCACTGAATCAACCTATCTACTGCCCTGGCCGAGCTCGCCACCAGAAGCTTTGGCAG
CTCCTCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCCGCCCTTC
TGGCTGCCCCCCCCGACTCCGACGCTGAGTCCTATTCTCCATGCCCCCCTGGAGGGGGGA-7500
GCCTGGGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCAGTAGTGAGGCCAACGC
GGAGGATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCACTCGTCACCCCGTG
CGCCGCGGAAGAAGACAGAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTACCA
CAATTTGGTGTATTCCACCACCTCAGCGAGTGCTTGCCTAAGGCGAGAAGAAGTCACTAT
TGACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTACTCAAGGAGGTTAAAGCAGC-7800
GGCGTCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGCAGCCTGACGCCCC
ACACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTTGCCATGCCAGAAA
GGCCGTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACAATGTAACACCAAT
AGACACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTTCAGCCTGAGAAGGGGGGTG
TAAGCCAGCTCGTCTCATCGTGTTCCTCCGATCTGGGCGTGCGCGTGTGCGAAAAGATGGC-8100
TTTGTACGACGTGGTTACAAAGCTCCCCTTGGCCGTGATGGGAAGCTCCTACGGATTCCA
ATACTCACCAGGACAGCGGGTTGAATTCCTCGTGAAGCGTGGAAAGTCCAAGAAAACCCC
AATGGGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCG
TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCCGCGTGGCCATCAA
GTCCCTCACCAGAGAGGCTTTATGTTGGGGGCCCTCTTACCAATTCAAGGGGGGAGAACTG-8400
CGGCTATCGCAGGTGCCGCGCGAGCGGCGTACTGACAACTAGCTGTGGTAACACCCCTCAC
TTGTACATCAAGGCCCGGGCAGCCTGTGAGCCGCGAGGGCTCCAGGACTGCACCATGCT
CGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGC
GAGCCTGAGAGCCTTACGGAGGCTATGACCAGGTACTCCGCCCCCCTGGGGACCCCCC
ACAACCAGAATACGACTTGGAGCTCATAACATCATGCTCCTCCAACGTGTGAGTCGCCCCA-8700
CGACGGCGCTGGAAAGAGGGTCTACTACCTCACCCGTGACCCCTACAACCCCCCTCGCGAG
AGCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCTGGCTAGGCAACATAATCAT
GTTTGGCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCTTAT
AGCCAGGGACAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCAT
AGAACCACCTTGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTTCACT-9000
CCACAGTTACTCTCCAGGTGAAATTAATAGGGTGGCCGCATGCCTCAGAAAACCTTGGGGT
ACCGCCCTTGCAGGCTTGGAGACACCGGGCCCGAGCGTCCGCGCTAGGCTTCTGGCCAG
AGGAGGCGAGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGCAGTAAGAACAAGCT
CAAAC



FIG. 62D

1 CACTCCACCATGAATCACTCCCCTGTGAGGAACTACTGTCTTCACGCAGAAAGCGTCTAG
GTGAGGTGGTACTTAGTGAGGGGACACTCCTTGATGACAGAAGTGCCTCTTCGCAGATC

61 CCATGGCGTTAGTATGAGTGTCTGTCAGCCTCCAGGACCCCCCTCCGGGAGAGCCATA
GGTACCGCAATCATACTCACAGCACGTGCGAGGTCTGGGGGGGAGGGCCCTCTCGGTAT

121 GTGGTCTGCGGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCCTTTCTTGGA
CACCAGACGCCTTGGCCACTCATGTGGCTTAACGGTCTGCTGGCCCAGGAAAGAACCT

181 TCAACCCGCTCAATGCCTGGAGATTTGGGCGTGCCCCGCAAGACTGCTAGCCGAGTAGT
AGTTGGGCGAGTTACGGACCTCTAAACCCGCACGGGGGCGTTCTGACGATCGGCTCATCA

241 GTTGGGTGCGGAAAGGCCTTGTGGTACTGCCTGATAGGGTGCTTGCAGTGCCCCGGGAG
CAACCCAGCGCTTTCCGGAACACCATGACGGACTATCCACGAACGCTACGGGGGCCCTC

301 GTCTCGTAGACCGTGACCATGAGCACGAATCCTAAACCTCAAAAAAAAAACAAACGTAA
CAGAGCATCTGGCACGTGGTACTCGTGCTTAGGATTTGGAGTTTTTTTTTTGTTTGCAAT

361 CACCAACCGTCGCCCACAGGACGTCAAGTTCCCGGGTGGCGGTCAGATCGTTGGTGGAGT
GTGGTTGGCAGCGGGTGTCTGCAAGTTCAAGGGCCACCGCCAGTCTAGCAACCACTCA

421 TTACTTGTGGCGCGCAGGGGCCCTAGATTGGGTGTGCGCGGACGAGAAAGACTTCCGA
AATGAACAACGGCGCGTCCCCGGGATCTAACCACACGCGCGCTGCTCTTCTGAAGGCT

481 GCGGTGCAACCTCGAGGTAGACGTGAGCCTATCCCCAAGGCTCGTCGGCCCGAGGGCAG
CGCCAGCGTTGGAGCTCCATCTGCAGTGCGATAGGGGTTCCGAGCAGCCGGGCTCCCGTC

541 GACCTGGGCTCAGCCCGGGTACCCTTGGCCCTCTATGGCAATGAGGGTGTGCGGGTGGG
CTGGACCCGAGTCGGGCCCATGGGAACCGGGGAGATACCGTTACTCCCGACGCCACCCG

601 GGGATGGCTCCTGTCTCCCGTGGCTCTCGGCCTAGCTGGGGCCCCACAGACCCCCGGCG
CCCTACCGAGGACAGAGGGGACCGAGAGCCGGATCGACCCGGGGTGTCTGGGGGCGCG

661 TAGGTGCGCAATTTGGGTAAGGTATCGATACCCTTACGTGCGGCTTCGCCGACCTCAT
ATCCAGCGCGTTAAACCCATTCCAGTAGCTATGGGAATGCACGCCGAAGCGGCTGGAGTA

721 GGGGTACATACCGCTCGTCGGCGCCCTCTTGGAGGCGCTGCCAGGGCCCTGGCGCATGG
CCCCATGTATGGCGAGCAGCCGCGGGGAGAACCTCCGCGACGGTCCCGGGACCGCGTACC

781 CGTCCGGGTTCTGGAAGACGGCGTGAACATATGCAACAGGGAACCTTCTGGTTGCTCTTT
GCAGGCCCAAGACCTTCTGCCGCACTTGATACGTTGTCCCTTGGAAAGGACCAACGAGAAA

841 CTCTATCTTCCTTCTGGCCCTGCTCTCTTGTGTTGACTGTGCCCGCTTCGGCCTACCAAGT
GAGATAGAAGGAAGACCGGGACGAGAGAACGAACCTGACACGGGCGAAGCCGGATGGTTCA

901 GCGCAACTCCACGGGGCTTTACCACGTACCAATGATTGCCCTAACTCGAGTATTGTGTA
CGCGTTGAGGTGCCCCGAAATGGTGAGTGTTACTAACGGGATTGAGCTCATAACACAT

961 CGAGGCGGCCGATGCCATCCTGCACACTCCGGGGTGCCTCCCTTGCCTTCTGAGGGCAA
GCTCCGCGGGCTACGGTAGGACGTGTGAGGCCCCACGCAGGGAACGCAAGCACTCCCGTT

1021 CGCCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCC
GCGGAGCTCCACAACCCACCGCTACTGGGGATGCCACCGGTGGTCCCTACCGTTTGAGGG

1081 CGCGACGACGCTTCGACGTACATCGATCTGCTTGTGCGGAGCGCCACCCTCTGTTCCGG
GCGCTGCGTCGAAGCTGCAGTGTAAGTAGACGAACAGCCCTCGCGGTGGGAGACAAGCCG

1141 CCTCTACGTGGGGGACCTATGCGGGTCTGTCTTTCTTGTGCGGCAACTGTTACCTTCTC
GGAGATGCACCCCTGGATACGCCAGACAGAAAGAACAGCCGGTTGACAAGTGGAAAGAG

1201 TCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCGGCCATATAAC
AGGGTCCGCGGTGACCTGCTGCGTTCCAACGTTAACGAGATAGATAGGGCCGGTATATTG

1261 GGGTCACCGCATGGCATGGGATATGATGATGAACTGGTCCCCTACGACGGCGTTGGTAAT
CCAGTGGCGTACCGTACCCTATACTACTACTTGACCAGGGGATGCTGCCGCAACCATTA

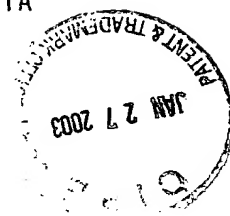


FIG. 62E

1321 GGCTCAGCTGCTCCGGATCCCACAAGCCATCTTGGACATGATCGCTGGTGCTCACTGGGG
CCGAGTCGACGAGGCTAGGGTGTTCGGTAGAACCTGTACTAGCGACCACGAGTGACCCC

1381 AGTCCTGGCGGGCATAGCGTATTTCTCCATGGTGGGGAAGTGGGCGAAGGTCCTGGTAGT
TCAGGACCGCCGTATCGCATAAAGAGGTACCACCCCTTGACCCGCTTCCAGGACCATCA

1441 GCTGCTGCTATTTGCCGGCGTCGACGCGGAAACCCACGTACCAGGGGGAAGTGCCGGCCA
CGACGACGATAAACGGCCGCGAGCTGCGCCTTTGGGTGCAGTGGCCCCCTTCACGGCCGGT

1501 CACTGTGTCTGGATTTGTTAGCCTCCTCGCACCAGGCGCCAAGCAGAACGTCCAGCTGAT
GTGACACAGACCTAAACAATCGGAGGAGCGTGGTCCGCGGTTTCGTCTTGACGGTCGACTA

1561 CAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAACTGCAATGATAGCCTCAA
GTTGTGGTTGCCGTCAACCGTGGAGTTATCGTGCCGGGACTTGACGTTACTATCGGAGTT

1621 CACCGGCTGGTTGGCAGGGCTTTTCTATCACCACAAGTTCAACTCTTCAGGCTGTCTCTGA
GTGGCCGACCAACCGTCCCAGAAAGATAGTGGTGTCAAGTTGAGAAGTCCGACAGGACT

1681 GAGGCTAGCCAGCTGCCGACCCCTTACCGATTTTGACCAGGGCTGGGGCCCTATCAGTTA
CTCCGATCGGTGACGGCTGGGGAATGGCTAAAGTGGTCCCGACCCCGGGATAGTCAAT

1741 TGCCAACGGAAGCGGGCCCGACGAGCGCCCTACTGCTGGCACTACCCCCAAAACCTTG
ACGGTTGCCTTCGCCGGGGCTGGTGCAGGGGATGACGACCGTGATGGGGGGTTTTGGAAC

1801 CGGTATTGTGCCGCGAAGAGTGTGTGTGGTCCGGTATATTGCTTACTCCCAGCCCCGT
GCCATAACACGGGCGCTTCTCACACACACCAAGGCCATATAACGAAAGTGAGGGTCGGGGCA

1861 GGTGGTGGGAACGACCGACAGGTGGGGCGCGCCACCTACAGCTGGGGTGAAAATGATAC
CCACCACCCTTGCTGGCTGTCCAGCCGCGCGGGTGGATGTGACCCCACTTTTACTATG

1921 GGACGTCTTCGTCCTTAACAATACCAGGCCACCGCTGGGCAATTGGTTGCGTTGTACCTG
CCTGCAGAAGCAGGAATTGTTATGGTCCGGTGGCGACCCGTTAACCAAGCCAACATGGAC

1981 GATGAACTCAACTGGATTACCAAAGTGTGCGGAGCGCCTCCTTGTGTATCGGAGGGGC
CTACTTGAGTTGACCTAAGTGGTTTCACACGCCTCGCGGAGGAACACAGTAGCCTCCCCG

2041 GGGCAACAACACCCTGCACTGCCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATA
CCCGTTGTTGTGGGACGTGACGGGGTGACTAACGAAGGCGTTTCGTAGGCCTGCGGTGTAT

2101 CTCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTGCAGTACCCGTATAG
GAGAGCCACGCCGAGGCCAGGGACCTAGTGTGGGTCCACGGACCAAGTGTGGGCATATC

2161 GCTTTGGCATTATCCTTGTACCATCAACTACACCATATTTAAAATCAGGATGTACGTGGG
CGAAACCCTAATAGGAACATGGTAGTTGATGTGGTATAAATTTTAGTCCTACATGCACCC

2221 AGGGGTGCAACACAGGCTGGAAGCTGCCTGCAACTGGACGCGGGGCGAACGTTGCGATCT
TCCCCAGCTTGTGTCCGACCTTCGACGGACGTTGACCTGCGCCCCGCTTGCAACGCTAGA

2281 GGAAGACAGGGACAGGTCCGAGCTCAGCCCGTTACTGCTGACCACTACACAGTGGCAGGT
CCTTCTGTCCCTGTCCAGGCTCGAGTCGGGCAATGACGACTGGTGTATGTGTCACCGTCCA

2341 CCTCCCGTGTTCCTTCACAACCCTACCAGCCTTGTCCACCGGCCTCATCCACCTCCACCA
GGAGGGCACAAGGAAGTGTGGGATGGTTCGGAACAGGTGGCCGGAGTAGGTGGAGGTGGT

2401 GAACATTGTGGACGTGCACTACTTGTACGGGGTGGGGTCAAGCATCGCGTCTGGGCCAT
CTTGTAACACCTGCACGTGATGAACATGCCCCACCCCAAGTTCGTAGCGCAGGACCCGGTA

2461 TAAGTGGGAGTACGTGCTTCTCCTGTTCTTCTGCTTGCAGACGCGCGCTGTGCTCCTG
ATCACCTCATGCAGCAAGAGGACAAGGAAGACGAACGTCTGCGCGCGCAGACGAGGAC

2521 CTTGTGGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGAACCTCGTAATACT
GAACACCTACTACGATGAGTATAGGGTTCGCTCCGCCGAAACCTCTTGAGCATTATGA

2581 TAATGCAGCATCCCTGGCCGGGACGACGGTCTTGTATCCTTCCTGTTCTTCTGCTT
ATTACGTGTAAGGACCGGCCCTGCGTGCCAGAACATAGGAAGGAGCACAAGAAGACGAA



FIG. 62F

2641 TGCATGGTATTTGAAGGGTAAGTGGGTGCCCCGAGCGGTCTACACCTTCTACGGGATGTG
ACGTACCATAAACTTCCCATTACCCACGGGCTCGCCAGATGTGGAAGATGCCCTACAC

2701 GCCTCTCCTCCTGCTCCTGTTGGCGTTGCCCCAGCGGGCGTACGCGCTGGACACGGAGGT
CGGAGAGGAGGACGAGGACAACCGCAACGGGGTCGCCGCGATGCGCGACCTGTGCCTCCA

2761 GGCCGCGTCGTGTGGCGGTGTTGTTCTCGTCGGGTTGATGGCGCTGACTCTGTACCATA
CCGGCGCAGCACACCGCCACAACAAGAGCAGCCAACTACCGCGACTGAGACAGTGGTAT

2821 TTACAAGCGCTATATCAGCTGGTGCTTGTGGTGGCTTCAGTATTTTCTGACCAGAGTGGG
AATGTTGCGGATATAGTCGACCACGAACACCACCGAAGTCATAAAAGACTGGTCTCACCT

2881 AGCGCAACTGCACGTGTGGATTCCCCCCTCAACGTCCGAGGGGGGCGCGACGCCGTGAT
TCGCGTTGACGTGCACACCTAAGGGGGGGAGTTGCAGGCTCCCCCGCGCTGCGGCAGTA

2941 CTTACTCATGTGTGCTGTACACCCGACTCTGGTATTTGACATCACCAAATTGCTGCTGGC
GAATGAGTACACACGACATGTGGGCTGAGACCATAAACTGTAGTGGTTTAACGACGACCG

3001 CGTCTTCGGACCCCTTTGGATTCTTCAAGCCAGTTTGCTTAAAGTACCCTACTTTGTGCG
GCAGAAGCCTGGGGAACCTAAGAAGTTCGGTCAAACGAATTTATGGGATGAAACACGC

3061 CGTCCAAGGCCTTCTCCGGTTCGCGCGTTAGCGCGGAAGATGATCGGAGGCCATTACGT
GCAGGTTCCGGAAGAGGCCAAGACGCGCAATCGCGCCTTCTACTAGCCTCCGGTAATGCA

3121 GCAAATGGTCATCATTAAAGTTAGGGGCGCTTACTGGCACCTATGTTTATAACCATCTCAC
CGTTTACCAGTAGTAATTCAATCCCCGCGAATGACCGTGGATACAAATATTGGTAGAGTG

3181 TCCTCTTCGGGACTGGGCGCACAACGGCTTGCAGATCTGGCCGTGGCTGTAGAGCCAGT
AGGAGAAGCCCTGACCCGCGTGTTCGCGAACGCTCTAGACCGGCACCGACATCTCGGTCA

3241 CGTCTTCTCCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGCGG
GCAGAAGAGGGTTTACCTCTGGTTCGAGTAGTGACCCCCCGTCTATGGCGGCGCACGCC

3301 TGACATCATCAACGGCTTGCTGTTTCCGCCGCGAGGGGCCGGGAGATACTGCTCGGGCC
ACTGTAGTAGTTGCCGAACGGACAAAGGCGGGCGTCCCCGGCCCTCTATGACGAGCCCGG

3361 AGCCGATGGAATGGTCTCCAAGGGGTGGAGGTTGCTGGCGCCATCACGGCGTACGCCCA
TCGGCTACCTTACCAGAGGTTCCCCACCTCCAACGACCGCGGGTAGTGCCGCGATGCGGGT

3421 GCAGACAAGGGGCTCCTAGGGTGCATAATCACCAGCCTAACTGGCCGGGACAAAAACCA
CGTCTGTTCCCGGAGGATCCACGTATTAGTGGTTCGGATTGACCGGCCCTGTTTTTGGT

3481 AGTGGAGGGTGAGGTCCAGATTGTGTCAACTGCTGCCCAAACCTTCTGGCAACGTGCAT
TCACCTCCCACTCCAGGTCTAACACAGTTGACGACGGGTTTGGAAAGGACCGTTGCACGTA

3541 CAATGGGGTGTGCTGGACTGTCTACCACGGGGCCGGAACGAGGACCATCGCGTCACCCAA
GTTACCCACACGACCTGACAGATGGTGCCCCGGCCTTGCTCCTGGTAGCGAGTGGGTT

3601 GGGTCCTGTATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGGCTGGCCCCGCTCC
CCCAGGACAGTAGGTCTACATATGGTTACATCTGGTTCGGAACACCCGACCGGGCGAGG

3661 GCAAGGTAGCCGCTCATTGACACCCTGCACTTGCGGCTCCTCGGACCTTTACCTGGTCAC
GTTCCATCGGCGAGTAACTGTGGGACGTGAACGCCGAGGAGCCTGGAATGGACCAAGT

3721 GAGGCACGCCGATGTCATTCCCGTGCGCCGGCGGGGTGATAGCAGGGGCGAGCCTGCTGTC
CTCCGTGCGGCTACAGTAAGGGCACGCGGCCGCCCACTATCCTCCCGTCGGACGACAG

3781 GCCCCGGCCCATTTCTACTTGAAGGCTCCTCGGGGGGTCCGCTGTTGTGCCCCGCGGG
CGGGGCCGGGTAAAGGATGAACCTTCCGAGGAGCCCCCAGGCGACAACACGGGGCGCCC

3841 GCACGCCGTGGGCATATTTAGGGCCGCGGTGTGCACCCGTGGAGTGGCTAAGGCGGTGGA
CGTGCGGCACCCGTATAAATCCCGGCGCCACACGTGGGCACCTCACCGATTCCGCCACCT

3901 CTTTATCCCTGTGGAGAACCCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTC
GAAATAGGGACACCTCTTGGATCTCTGTTGGTACTCCAGGGGCCACAAGTGCCTATTGAG



FIG. 62G

3961 CTCTCCACCAAGTAGTGCCCCAGAGCTTCCAAGGTGGCTCACCTCCATGCTCCACAGGCAG
GAGAGGTGGTCATCACGGGGTCTCGAAAGGTCCACCGAGTGGAGGTACGAGGGTGTCCGTG

4021 CGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
GCCGTTTTCTGGTTCCAGGGCCGACGTATACGTCGAGTCCCGATATTCCACGATCATGA

4081 CAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCTCATGGGAT
GTTGGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGAGTACCCTA

4141 CGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTA CT
GCTAGGATTGTAGTCTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAGTGATGAG

4201 CACCTACGGCAAGTTCCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGACATAATAAT
GTGGATGCCGTTCAAGGAACGGCTGCCGCCACGAGCCCCCGCAATACTGTATTATTA

4261 TTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATCGGCACTGTCTTGA
AACACTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAGCCGTGACAGGAAC

4321 CCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTC
GGTTCGTCTCTGACGCCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGAGGCCCGAG

4381 CGTCACTGTGCCCCATCCCAACATCGAGGAGGTTGCTCTGTCCACCACCGGAGAGATCCC
GCACTGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCTCTCTAGGG

4441 TTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTTCTG
AAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCTCTGTAGAGTAGAAGAC

4501 TCATTCAAAGAAGAGTGGCAGCAACTCGCCGCAAAGCTGGTCGCATTGGGCATCAATGC
AGTAAGTTTCTTCTTACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCGTAGTTACG

4561 CGTGGCCTACTACCGCGGTCTTGACGTGTCCGTATCCCGACCAGCGGGCGATGTTGTGCT
GCACCGGATGATGGCGCCAGAACTGCACAGGCAGTAGGGCTGGTCGCCGCTACAACAGCA

4621 CGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTG
GCACCGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGAC

4681 CAATACGTGTGTACCCAGACAGTCGATTTTCAGCCTTGACCCTACCTTCACCATTGAGAC
GTTATGCACACAGTGGGTCTGTGAGCTAAAGTCGGAACCTGGGATGGAAGTGGTAACCTG

4741 AATCACGCTCCCCAGGATGCTGTCTCCCGCACTCAACGTGCGGGCAGGACTGGCAGGGG
TTAGTGCGAGGGGGTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCTGACCGTCCCC

4801 GAAGCCAGGCATCTACAGATTTGTGGCACCAGGGGGAGCGCCCTCCGGCATGTTGCACTC
CTTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTGAG

4861 GTCCGTCTCTGTGAGTGCTATGACGCGAGGCTGTGCTTGGTATGAGCTCACGCCCGCCGA
CAGGCAGGAGACACTCACGATACTGCGTCCGACACGAACCATACTCGAGTGCGGGCGGGT

4921 GACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCA
CTGATGTCAATCCGATGCTCGCATGTACTTGTGGGGCCCCGAAGGGCACACGGTCTGTG

4981 TCTTGAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCACTTTTCTATC
AGAACTTAAACCCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAAGATAG

5041 CCAGACAAAGCAGAGTGGGGAGAACCTTCCTTACCTGGTAGCGTACCAAGCCACCGTGTG
GGTCTGTTTCGTCTACCCCTCTTGGAAGGAATGGACCATCGCATGGTTCGGTGGCACAC

5101 CGCTAGGGCTCAAGCCCCCTCCCCATCGTG6GACCAAGATGTGGAAGTGTGTTGATTGCGCT
GCGATCCCGAGTTCGGGGAGGGGGTAGCACCTGGTCTACACCTTCACAACTAAGCGGA

5161 CAAGCCACCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTGAGAATGA
GTTGCGGTGGGAGGTACCCGTTGTGGGGACGATATGTCTGACCCGCGACAAGTCTTACT

5221 AATCACCTGACGCAACCAAGTCACCAAAATACATCATGACATGCATGTGCGCCGACCTGGA
TTAGTGGGACTGCGTGGGTCAGTGGTTTATGTAGTACTGTACGTACAGCCGGCTGGACCT



FIG. 62H

5281 GGTCTGTCACGAGCACCTGGGTGCTCGTTGGCGGGCTCTGGCTGCTTTGGCCGCGTATTG
CCAGCAGTGCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACCGGCGCATAAC

5341 CCTGTCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGCCGGGAAGCCGGCAAT
GGACAGTTGTCCGACGCACCAAGTATCACCCGTCCCAGCAGAACAGGCCCTTCGGCCGTTA

5401 CATACCTGACAGGGGAAGTCCTCTACCGAGAGTTCGATGAGATGGAAGAGTGCTCTCAGCA
GTATGGACTGTCCCTTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCAGAGAGTCGT

5461 CTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGG
GAATGGCATGTAGCTCGTTCCCTACTACGAGCGGCTCGTCAAGTTCGTCTTCGGGAGCC

5521 CCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCTGCTGTCCAGACCAACTG
GGAGGACGTCTGGCGCAGGGCAGTCCGTCTCCAATAGCGGGGACGACAGGTCTGGTTGAC

5581 GCAAAAACCTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATA
CGTTTTTGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCCCTATGTTAT

5641 CTTGGCGGGCTTGTAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTAC
GAACCGCCCGAACAGTTGCGACGGACCATTGGGGCGGTAACGAAGTAACACCGAAAATG

5701 AGCTGCTGTCACAGCCCACTAACCCTAGCCAAACCTCCTCTTCAACATATTGGGGGG
TCGACGACAGTGGTCGGGTGATTGGTGATCGGTTTGGGAGGAGAAGTTGTATAACCCCC

5761 GTGGGTGGCTGCCAGCTCGCCGCCCCGGGTGCCGCTACTGCCTTTGTGGGCGCTGGCTT
CACCCACCGACGGGTGAGCGGGCGGGGGCCACGGCGATGACGGAAACACCCGCGACCGAA

5821 AGCTGGCGCCGCCATCGGCAGTGTGGACTGGGGAAGGTCCTCATAGACATCCTTGCAGG
TCGACCGCGGGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTGTAGGAACGTCC

5881 GTATGGCGCGGGCGTGGCGGGAGCTCTTGTTGGCATTCAAGATCATGAGCGGTGAGGTCCC
CATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGG

5941 CTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGT
GAGGTGCCCTCCTGGACCAGTTAGATGACGGGCGGTAGGAGAGCGGGCCTCGGGAGCATCA

6001 CGGCGTGCTGTGTCAGCAATACTGCGCCGGCACGTTGGCCCGGGCGAGGGGGCAGTGCA
GCCGACCCAGACACGTGTTATGACGCGGGCGTGCAACCGGGCCCGCTCCCCCGTCACGT

6061 GTGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGAACCATGTTTCCCCACGCACTA
CACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGGTGCGTGAT

6121 CGTGCCGGAGAGCGATGCAGCTGCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAAC
GCACGGCCTCTCGCTACGTGACGGGCGCAGTGACGGTATGAGTCGTGAGGTGACATTG

6181 CCAGCTCCTGAGGCGACTGCACCAAGTGGATAAGCTCGGAGTGTAACCACTCCATGCTCCGG
GGTCGAGGACTCCGCTGACGTGGTCACCTATTCGAGCCTCACATGGTGAGGTACGAGGCC

6241 TTCCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTG
AAGGACCGATTCCCTGTAGACCTGACCTATACGCTCCACAACCTCGTGAAATCTCTGGAC

6301 GCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCTTTGTGTCTGCGCAGCGCGG
CGATTTTCGATTGAGTACGGTGTGACGGACCTAGGGGAAACACAGGACGGTTCGCGCC

6361 GTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
CATATTCGCCAGACCGCTCACCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACT

6421 GATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCCTAGGACCTGCAAGAA
CTAGTGACCTGTACAGTTTTTGCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCTT

6481 CATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCCTGTACCCCCCTTCC
GTACACCTCACCTGGAAGGGGTAATTACGGATGTGGTGCCCGGGGACATGGGGGGAAGG

6541 TGGCGCGAACTACACGTTGCGGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAG
ACGCGGGCTTGATGTGCAAGCGCGATACCTCCACAGACGTCTCCTTATACACCTCTATT



FIG. 62I

6601 GCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCGTG
CGTCCACCCCTGAAGGTGATGCACTGCCCATAGTATGACTGTTAGAGTTTACGGGCAC

6661 CCAGGTCCCATCGCCGAATTTTTCACAGAATTGGACGGGGTGCGCTACATAGGTTTGC
GGTCCAGGGTAGCGGGCTTAAAAAGTGTCTTAACCTGCCCCACGCGGATGTATCCAAACG

6721 GCCCCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTGAGAGTAGGACTCCACGAATA
CGGGGGGACGTTGCGGAACGACGCCCTCCTCCATAGTAAGTCTCATCCTGAGGTGCTTAT

6781 CCCGGTAGGGTCGCAATTACCTTGCGAGCCCGAACCGGACGTGGCCGTGTTGACGTCCAT
GGGCCATCCCAGCGTTAATGGAACGCTCGGGCTTGCCCTGCACCGGCACAACTGCAGGTA

6841 GCTCACTGATCCCTCCCATATAACAGCAGAGGCGGCCGGGCGAAGGTTGGCGAGGGGATC
CGAGTGACTAGGGAGGGTATATTGTCGTCTCCGCCGGCCCGCTTCCAACCGCTCCCTAG

6901 ACCCCCTCTGTGGCCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAAC
TGGGGGGAGACACCGGTCGAGGAGCCGATCGGTCGATAGGCGAGGTAGAGAGTTCCGTTG

6961 TTGCACCGCTAACCATGACTCCCTGATGCTGAGCTCATAGAGGCAACCTCCTATGGAG
AACGTGGCGATTGGTACTGAGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTC

7021 GCAGGAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAAACAAAGTGGTGATTCTGGA
CGTCTCTACCCGCCGTTGTAGTGCTCCCAACTCAGTCTTTTGTTCACCACTAAGACCT

7081 CTCCTTCGATCCGCTTGTTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAAAT
GAGGAAGCTAGGCGAACACCGCCTCCTCCTGCTCGCCCTCTAGAGGCATGGGCGTCTTTA

7141 CCTGCGGAAGTCTCGGAGATTGCCCCAGGCCCTGCCCGTTTGGGCGCGGGCCGGACTATAA
GGACGCCTTCAGAGCCTCTAAGCGGGTCCGGGACGGGCAAAACCCGCGCGGCGCTGATATT

7201 CCCCCGCTAGTGGAGACGTGGAAAAAGCCCGACTACGAACCACCTGTGGTCCATGGCTG
GGGGGGCGATCACCTCTGCACCTTTTTCGGGCTGATGCTTGGTGGACACCAGGTACCGAC

7261 TCCGCTTCCACCTCCAAAGTCCCTCCTGTGCTCCGCTCGGAAGAAGCGGACGGTGGT
AGGCGAAGGTGGAGGTTTCAGGGGAGGACACGGAGGCGGAGCCTTCTTCGCTGCCACCA

7321 CCTCACTGAATCAACCCTATCTACTGCCTTGCCCGAGCTCGCCACCAGAAGCTTTGGCAG
GGAGTGACTTAGTTGGGATAGATGACGGAACCGGCTCGAGCGGTGGTCTTCGAAACCGTC

7381 CTCCTCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCGCCCTTC
GAGGAGTTGAAGGCCGTAATGCCCGCTGTTATGCTGTTGTAGGAGACTCGGGCGGGGAAG

7441 TGGCTGCCCCCGGACTCCGACGCTGAGTCCTATTCTCCATGCCCCCTGGAGGGGGGA
ACCGACGGGGGGGCTGAGGCTGCGACTCAGGATAAGGAGGTACGGGGGGGACCTCCCCCT

7501 GCCTGGGGATCCGGATCTTAGCGACGGGTCATGGTCAACGGTCAGTAGTGAGGGCAACGC
CGGACCCCTAGGCCTAGAATCGCTGCCAGTACCAAGTTGCCAGTCATCACTCCGGTTGCG

7561 GGAGGATGTCGTGTGCTGCTCAATGTCTTACTCTTGACAGGCGCACTCGTCACCCCGTG
CCTCCTACAGCACACGACGAGTTACAGAATGAGAACCTGTCCGCGTGAGCAGTGGGGCAC

7621 CGCCGCGGAAGAACAGAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTACCA
GCGGCGCCTTCTTGCTTTGACGGGTAGTTACGTGATTGCTTGAGCAACGATGCAGTGGT

7681 CAATTTGGTGTATTCCACCACCTCACGCAGTGCTTGCCAAAGGCAGAAAGTACATT
GTTAAACCACATAAGGTGGTGGAGTGCGTCACGAACGGTTTCCGTCTTCTTTCAGTGTA

7741 TGACAGACTGCAAGTTCTGGACAGCCATTACCAGGACGTAAGGAGGTTAAAGCAGC
ACTGTCTGACGTTCAAGACCTGTCGGTAATGGTCTGCATGAGTTCTCCAATTTGCTCG

7801 GCGGTCAAAAGTGAAGGCTAACTTGCTATCCGTAGAGGAAGCTTGACGCTGACGCCCC
CCGACGTTTTCACTTCCGATTGAACGATAGGCATCTCCTTCGAACGTCGGAAGTGGGGGG

7861 AACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAAGACGTCCGTTGCCATGCCAGAAA
TGTGAGTCGGTTTAGGTTCAAACCAATACCCCGTTTTCTGCAGGCAACGGTACGGTCTTT



FIG. 62J

7921 GGCCGTAACCCACATCAACTCCGTGTGGAAAGACCTTCTGGAAGACAATGTAACACCAAT
CCGGCATTGGGTGTAGTTGAGGCACACCTTTCTGGAAGACCTTCTGTTACATTGTGGTTA

7981 AGACACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTCAGCCTGAGAAGGGGGGTGCG
TCTGTGATGGTAGTACCGATTCTTGCTCCAAAAGACGCAAGTCGGACTCTTCCCCCAGC

8041 TAAGCCAGCTCGTCTCATCGTGTTCCTCCGATCTGGGCGTGCAGCTGTGCGAAAAGATGGC
ATTCGGTTCGAGCAGAGTAGCACAAGGGGCTAGACCCGCACGCGCACACGCTTTTCTACCG

8101 TTTGTACGACGTGGTTACAAAGCTCCCCTTGGCCGTGATGGGAAGCTCCTACGGATTCCA
AAACATGCTGCACCAATGTTTCGAGGGGAACCGGCACTACCCTTCGAGGATGCCTAAGGT

8161 ATAATCACCAGGACAGCGGGTTGAATTCCTCGTGAAGCGTGGAAAGTCCAAGAAAACCCC
TATGAGTGGTCTGTGCCCCAACTTAAGGAGCAGTTCGCACCTTCAGGTTCTTTTGGGG

8221 AATGGGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCG
TTACCCCAAGAGCATACTATGGGCGACGAAACTGAGGTGTCAGTGACTCTCGCTGTAGGC

8281 TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCAAGCCCGCTGGCCATCAA
ATGCCTCCTCCGTTAGATGGTTACAACACTGGAGCTGGGGGTTGGGCGCACCGGTAGTT

8341 GTCCCTCACCAGAGGGCTTTATGTTGGGGGCCCTCTTACCAATTCAAGGGGGGAGAAGT
CAGGGAGTGGCTCTCCGAAATACAACCCCGGGAGAAATGGTTAAGTTCCCCCTCTTGAC

8401 CGGCTATCGCAGGTGCCGCGCAGCGGGCTACTGACAACTAGCTGTGGTAACACCCTCAC
GCCGATAGCGTCCACGGCGCGCTCGCCGCATGACTGTTGATCGACACCATTGTGGGAGTG

8461 TTGCTACATCAAGGCCCGGGCAGCCTGTGCGAGCCGAGGGCTCCAGGACTGCACCATGCT
AACGATGTAGTTCCGGGCCCGTGGACAGCTCGGCGTCCCGAGGTCTGACGTGGTACGA

8521 CGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGC
GCACACACCGCTGCTGAATCAGCAATAGACACTTTCGCGCCCCAGGTCTCTGCGCCG

8581 GAGCCTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCCTGGGGACCCCC
CTCGGACTCTCGGAAGTGCTCCGATACTGGTCCATGAGGCGGGGGGACCCCTGGGGGG

8641 ACAACCAGAATACGACTTGAGCTCATAACATCATGCTCCTCCAACGTGTCAGTGCGCCA
TGTTGGTCTTATGCTGAACCTCGAGTATTGTAGTACGAGGAGGTTGCACAGTCAGCGGGT

8701 CGACGGCGCTGGAAAGAGGGTCTACTACCTACCCGTGACCCTACAACCCCTCGCGAG
GCTGCCGCGACCTTTCTCCAGATGATGGAAGTGGGCACTGGGATGTTGGGGGGAGCGCTC

8761 AGCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCAT
TCGACGCACCCTCTGTGTTCTGTGTGAGGTGAGTTAAGGACCGATCCGTTGTATTAGTA

8821 GTTTGCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCTTAT
CAAACGGGGGTGTGACACCCGCTCTACTATGACTACTGGGTAAAGAAATCGCAGGAATA

8881 AGCCAGGGACAGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCAT
TCGGTCCCTGGTCGAACTTGTCCGGGAGCTAACGCTCTAGATGCCCGGACGATGAGGTA

8941 AGAACCCTTGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTTCACT
TCTTGGTGAAGTAGATGGAGGTTAGTAAGTTTCTGAGGTACCGGAGTCGCGTAAAAGTGA

9001 CCACAGTTACTCTCCAGGTGAAATTAATAGGGTGGCCGCGATGCCTCAGAAAATTGGGGT
GGTGTCAATGAGAGGTCCACTTTAATTATCCACCGGCGTACGGAGTCTTTTGAACCCCA

9061 ACCGCCCTTGGGAGCTTGGAGACACCGGGCCGAGCGTCCGCGCTAGGCTTCTGGCCAG
TGGCGGGAACGCTCGAACCTCTGTGGCCCGGGCTCGCAGGCGCGATCCGAAGACCGGTC

9121 AGGAGGCGAGGGCTGCCATATGTGGCAAGTACCTCTTCAACTGGGCAAGTAAAGACAAAGCT
TCCTCCGTCCCGACGGTATACACCGTTCATGGAGAAAGTTGACCCGTATTCTTGTTCGA

9181 CAAAC
GTTTG





FIG. 77

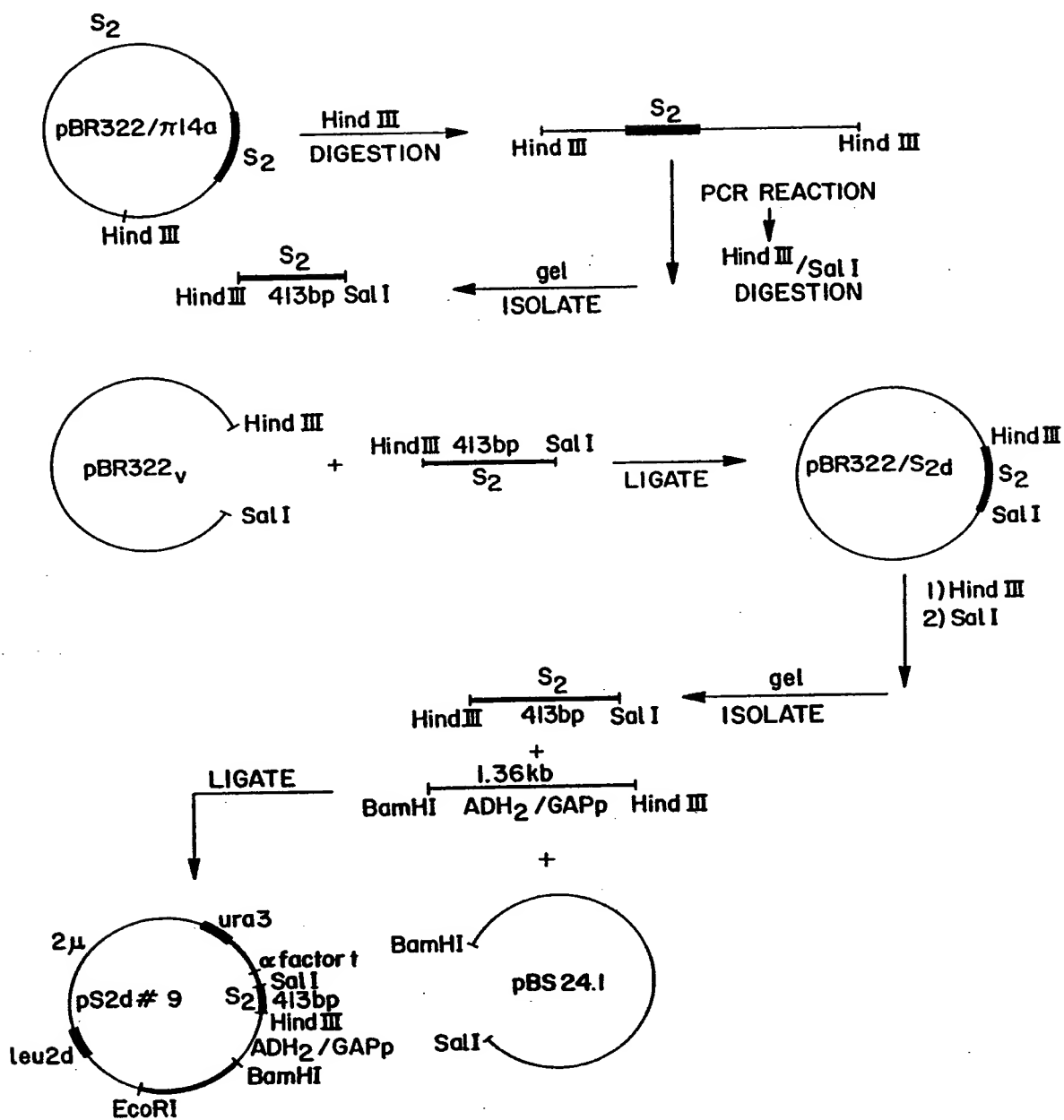




FIG. 78

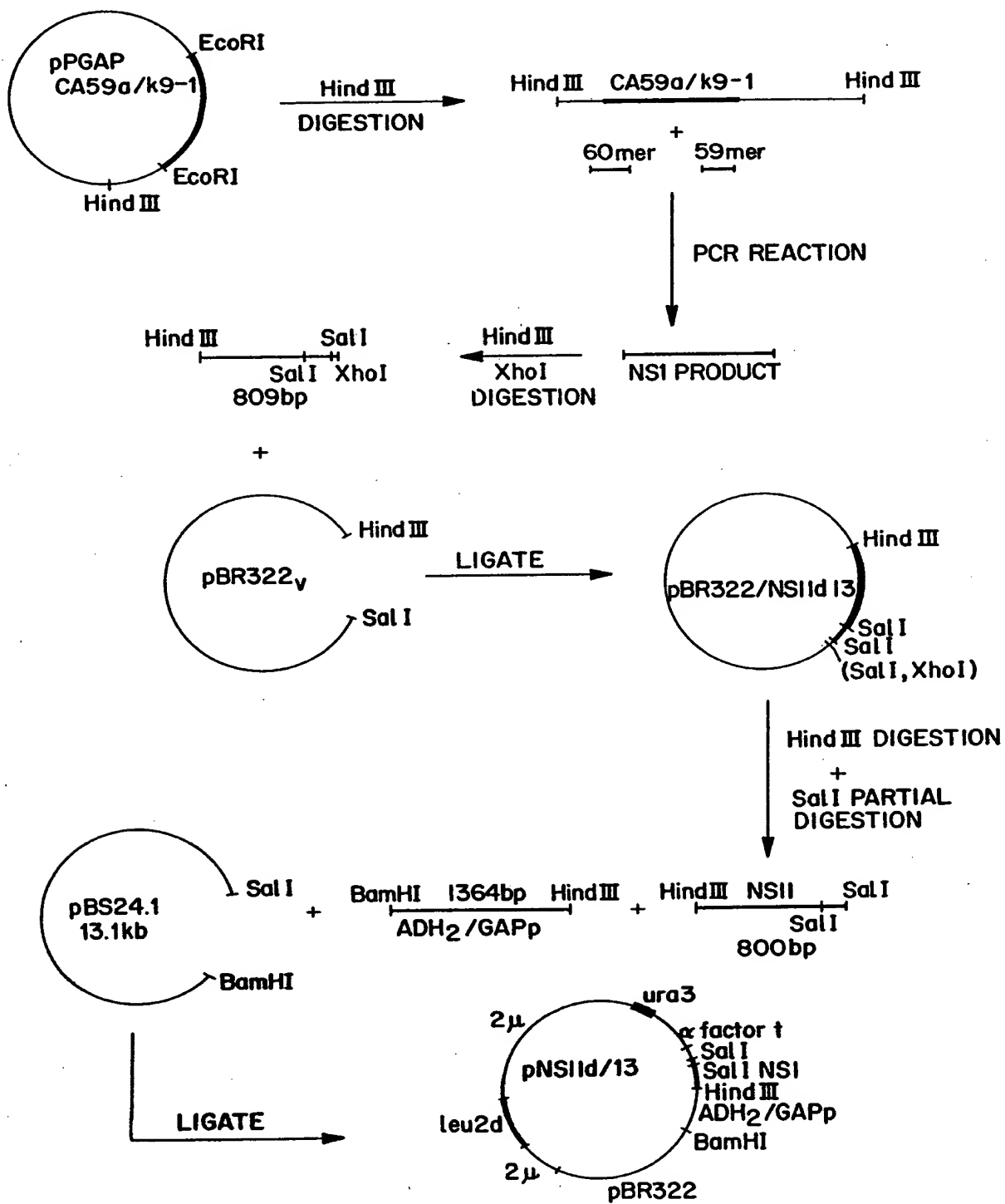




FIG. 79A

- 2 AlaValAspPheIleProValGluAsnLeuGluThrThrMetArgSerProValPh Thr
GCGGTGGACTTTATCCCTGTGGAGAACCTAGAGACAACCATGAGGTCCCCGGTGTTCACG
CGCCACCTGAAATAGGGACACCTCTTGATCTCTGTTGGTACTCCAGGGGCCACAAGTGC
- 29 MAE1, 40 NLA111, 43 MNL1, 45 AVA2 NLA1V SAU96, 49 NCI1 SC
RF1, 50 HPA11,
- 62 AspAsnSerSerProProValValProGlnSerPheGlnValAlaHisLeuHisAlaPro
GATAACTCCTCTCCACCAGTAGTGCCCCAGAGCTTCCAGGTGGCTCACCTCCATGCTCCC
CTATTGAGGAGAGGTGGTCATCACGGGGTCTCGAAGGTCCACCGAGTGGAGGTACGAGGG
- 69 MNL1, 83 BSP1286, 92 ALU1, 97 ECOR11 SCRF1, 106 HPH, 109
MNL1, 113 NLA111,
- 122 ThrGlySerGlyLysSerThrLysValProAlaAlaTyrAlaAlaGlnGlyTyrLysVal
ACAGGCAGCGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTG
TGTCCTCGCCGTTTTCGTGGTTCCAGGGCCGACGTATACGTCGAGTCCCGATATTCCAC
- 126 BBV FNU4H1, 127 NSPB11, 129 FNU4H1, 145 AVA2 NLA1V SAU96
, 148 NCI1 SCRF1, 149 HPA11, 152 BBV FNU4H1, 156 NDE1, 161 B
BV FNU4H1, 163 ALU1, 165 DDE1,
- 182 LeuValLeuAsnProSerValAlaAlaThrLeuGlyPheGlyAlaTyrMetSerLysAla
CTAGTACTCAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGCTTACATGTCCAAGGCT
GATCATGAGTTGGGGAGACAACGACGTTGTGACCCGAAACCACGAATGTACAGGTTCCGA
- 182 MAE1, 184 SCAL, 185 RSA1, 195 MNL1, 203 BBV FNU4H1, 228
AFL111 NSPC1, 229 NLA111,
- 242 HisGlyIleAspProAsnIleArgThrGlyValArgThrIleThrThrGlySerProIle
CATGGGATCGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATC
GTACCCTAGCTAGGATTGTAGTCCTGGCCCCACTCTTGTTAATGGTGACCGTCGGGGTAG
- 242 NLA111, 246 BIN1, 247 MBO1 SAU3A, 248 CLA1, 249 TAQ1, 25
1 BIN1 MBO1 SAU3A, 264 AVA2 SAU96, 267 HPA11 NCI1 SCRF1, 271
HPH, 291 BBV FNU4H1,
- 302 ThrTyrSerThrTyrGlyLysPheLeuAlaAspGlyGlyCysSerGlyGlyAlaTyrAsp
ACGTACTCCACCTACGGCAAGTTCCTTGCCGACGGCGGGTGCTCGGGGGGCGCTTATGAC
TGATGAGGTGGATGCCGTTCAAGGAACGGCTGCCGCCCCACGAGCCCCCGCGAATACTG
- 302 MAE2, 304 RSA1, 340 BSP1286 HGIA, 343 AVA1, 350 HAE11, 3
51 HHA1,
- 362 IleIleIleCysAspGluCysHisSerThrAspAlaThrSerIleLeuGlyIleGlyThr
ATAATAATTTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATTGGCACT
TATTATTAAACACTGCTCACGGTGAGGTGCCTACGGTGTAGGTAGAACCCGTAACCGTGA
- 372 MAE3, 391 FOK1, 392 SFAN1, 399 FOK1,
- 422 ValLeuAspGlnAlaGluThrAlaGlyAlaArgLeuValValLeuAlaThrAlaThrPro
GTCCTTGACCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCT
CAGGAACCTGGTTCGTCTCTGACGCCCCCGCTCTGACCAACACGAGCGGTGGCGGTGGGGA
- 431 TTHII12, 435 ALWN1, 461 BSP1286 HGIA, 479 MNL1,



FIG. 79B

482 ProGlySerValThrValProHisProAsnIleGluGluValAlaLeuS rThrThrGly
CCGGGCTCCGTCACGTGCCCCATCCCAACATCGAGGAGGTGCTCTGTCCACCACCGGA
GGCCCGAGGGCAGTGACACGGGGTAGGGTTGTAGCTCCTCCAACGAGACAGGTGGTGGCCT

482 HPA11, NC11, SCRF1, 484 BAN11, BSP1286, 485 NLA1V, 491 MAE3,
497 BSP1286, 503 FOK1, 513 TAQ1, 515 MNL1, 518 MNL1, 537 H
PA11,

542 GluIleProPheTyrGlyLysAlaIleProLeuGluValIleLysGlyGlyArgHisLeu
GAGATCCCTTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGAGACATCTC
CTCTAGGGAAAAATGCCGTTCCGATAGGGGGAGCTTCATTAGTTCCCCCCTCTGTAGAG

543 XHO2, 544 BIN1, MBO1, SAU3A, 571 MNL1, 573 TAQ1,

602 IlePheCysHisSerLysLysLysCysAspGluLeuAlaAlaLysLeuValAlaLeuGly
ATCTTCTGTTCATTCAAAGAAGAAGTGCGACGAACCTCGCCGAAAGCTGGTCGCATTGGGC
TAGAAGACAGTAAGTTTCTTCTTCACGCTGCTTGAGCGGCGTTTCGACCAGCGTAACCCG.

603 MBO11, 619 MBO11, 638 FNU4H1, 645 ALU1, 660 SFAN1,

662 IleAsnAlaValAlaTyrTyrArgGlyLeuAspValSerValIleProThrSerGlyAsp
ATCAATGCCGTGGCCTACTACCGCGGTCTTGACGTGTCGTCATCCCGACCAGCGGCGAT
TAGTTACGGCACC GGATGATGGCGCCAGAAGTGCACAGGCAGTAGGGCTGGTCCGCGCTA

672 HAE1, 673 HAE111, 682 NSPB11, SAC2, 683 THA1, 693 AFL111,
MAE2, 703 FOK1, 712 NSPB11, 714 FNU4H1,

722 ValValValValAlaThrAspAlaLeuMetThrGlyTyrThrGlyAspPheAspSerVal
GTTGTGTCGTGGCAACCGATGCCCTCATGACCGGCTATACCGGCGACTTCGACTCGGTG
CAACAGCAGCACCGTTGGCTACGGGAGTACTGGCCGATATGGCCGCTGAAGCTGAGCCAC

740 SFAN1, 745 MNL1, 748 NLA111, 753 HPA11, 762 HPA11, 771 T
AQ1, 773 HINF1, 778 HPH,

782 IleAspCysAsnThrCysValThrGlnThrValAspPheSerLeuAspProThrPheThr
ATAGACTGCAATACGTGTGTACCCAGACAGTCGATTTCAGCCTTGACCCTACCTTCACC
TATCTGACGTTATGCACACAGTGGGTCTGTGCTAGCTAAAGTCGGAAGTGGGATGGAAGTGG

794 AFL111, MAE2, 800 MAE3, 801 HPH, 813 TAQ1, 837 HPH,

842 IleGluThrIleThrLeuProGlnAspAlaValSerArgThrGlnArgArgGlyArgThr
ATTGAGACAATCACGCTCCCCAAGATGCTGTCTCCCGCACTCAACGTCGGGGCAGGACT
TAACTCTGTTAGTGCAGGGGGGTTCTACGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGA

866 SFAN1, 886 MAE2,

902 GlyArgGlyLysProGlyIleTyrArgPheValAlaProGlyGluArgProSerGlyMet
GGCAGGGGGAAGCCAGGCATCTACAGATTTGTGGCACCGGGGGAGCGCCCCCTCCGGCATG
CCGTCCCCCTTCGGTCCGTAGATGTCTAAACACCGTGGCCCCCTCGCGGGGAGGCCGTAC

914 ECOR11, SCRF1, 918 SFAN1, 934 BAN1, NLA1V, 938 HPA11, NC11,
SCRF1, 945 HAE11, 946 HHA1, 948 BGL1, 951 MNL1, 954 HPA11, 9
57 NSPC1, 958 NLA111,

962 PheAspSerSerValLeuCysGluCysTyrAspAlaGlyCysAlaTrpTyrGluLeuThr
TTCGACTCGTCCGTCTCTGTGAGTGCTATGACGCAGGCTGTGCTTGGTATGAGCTCAGC
AAGCTGAGCAGGCAGGAGACACTCAGGATACTGCGTCCGACACGAACCATACTCGAGTGC

963 TAQ1, 965 HINF1, 976 MNL1, 992 HGA1, 1003 TTHII2, 1013
BAN11, BSP1286, HGIA, SAC1, 1014 ALU1,



FIG. 79C

- 1051 RSA1, 1054 NLA111, 1063 AVA1 NC11 SCRF1 SMA1, 1064 HPA1
1 NC11 SCRF1, 1081 ECOR11 SCRF1,
- 1082 GlnAspHisLeuGluPheTrpGluGlyValPheThrGlyLeuThrHisIleAspAlaHis
CAGGACCATCTTGAATTTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCCAC
GTCCTGGTAGAACTTAAAACCCCTCCCGCAGAAATGTCCGGAGTGAGTATATCTACGGGTG
- 1084 AVA2 SAU96, 1103 MNL1, 1106 AHA11, 1107 HGA1, 1117 HAE1
STU1, 1118 HAE111, 1120 MNL1, 1133 SFAN1,
- 1142 PheLeuSerGlnThrLysGlnSerGlyGluAsnLeuProTyrLeuValAlaTyrGlnAla
TTTCTATCCCAGACAAAGCAGAGTGGGGAGAACCCTTCCTTACCTGGTAGCGTACCAAGCC
AAAGATAGGGTCTGTTTCGTCTCACCCCTCTTGAAGGAATGGACCATCGCATGGTTCGG
- 1183 ECOR11 SCRF1, 1192 RSA1, 1201 DRA3,
- 1202 ThrValCysAlaArgAlaGlnAlaProProProSerTrpAspGlnMetTrpLysCysLeu
ACCGTGTGCGCTAGGGCTCAAGCCCCCTCCCCATCGTGGGACCAGATGTGGAAGTGTGTG-
TGGCACACGCGATCCCGAGTTCGGGGAGGGGGTAGCACCTGGTCTACACCTTCAAAAC
- 1209 HHA1, 1212 MAE1, 1215 BAN11 BSP1286, 1226 MNL1, 1239 NL
ALV, 1240 AVA2 SAU96, 1256 TTH1112, 1261 HINF1,
- 1262 IleArgLeuLysProThrLeuHisGlyProThrProLeuLeuTyrArgLeuGlyAlaVal
ATTGCGCTCAAGCCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTT
TAAGCGGAGTTCGGGTGGGAGGTACCCGGTGTGGGGACGATATGTCTGACCCGCGACAA
- 1267 MNL1, 1279 MNL1, 1282 NCO1, 1283 NLA111, 1286 SAU96, 12
87 HAE111, 1313 HAE11, 1314 HHA1,
- 1322 GlnAsnGluIleThrLeuThrHisProValThrLysTyrIleMetThrCysMetSerAla
CAGAATGAAATCACCCCTGACGCAACCCAGTCACCAAATACATCATGACATGTCATGTCGGCC
GTCTTACTTTAGTGGGACTGCGTGGGTCTAGTGGTTTATGTAGTACTGTACGTACAGCCGG
- 1332 HPH, 1339 HGA1, 1349 MAE3, 1350 HPH, 1363 NLA111, 1367
NSPC1, 1368 NLA111, 1369 AVA3 NSI1, 1371 NSPC1, 1372 NLA111,
1377 CFR1 XMA3, 1378 HAE111,
- 1382 AspLeuGluValValThrSerThrTrpValLeuValGlyGlyValLeuAlaAlaLeuAla
GACCTGGAGGTGTCACGAGCACCTGGGTGCTCGTTGGCGGGCTCCTGGCTGCTTTGGCC
CTGGACCTCCAGCAGTGTCTCGTGGACCCACGAGCAACCGCCGAGGACCGACGAAACCGG
- 1384 ECOR11 SCRF1, 1385 GSU1, 1388 MNL1, 1394 MAE3, 1399 BSP
1286 HGIA, 1404 ECOR11 SCRF1, 1409 BSP1286 HGIA, 1419 FNU4H1
, 1421 AHA11, 1422 HGA1, 1426 ECOR11 SCRF1, 1430 BEV FNU4H1,
1437 CFR1, 1438 HAE111, 1439 FNU4H1, 1441 THA1,
- 1442 AlaTyrCysLeuSerThrGlyCysValValIleValGlyArgValValLeuSerGlyLys
GCGTATTGCTGTCAACAGGCTGCGTGGTCATAGTGGGCAGGGTCGTCTTGTCGGGAAG
CGCATAACGGACAGTTGTCCGACGCACCAAGTATCACCCGTCCAGCAGAACAGGCCCTTC
- 1453 HINC11, 1461 BEV FNU4H1, 1494 HPA11 NC11 SCRF1, 1501 NA
E1,
- 1502 ProAlaIleIleProAspArgGluValLeuTyrArgGluPheAspGluMetGluGluCys
CCGGCAATCATACCTGACAGGGAAGTCTCTACCGAGAGTTCGATGAGATGGAAGAGTGC
GGCCGTTAGTATGGACTGTCCCTCAGGAGATGGCTCTCAAGCTACTCTACCTTCTCAGC
- 1502 HPA11, 1528 MNL1, 1542 TAQ1, 1553 MB011, 1558 BSP1286 H
GIA,
- 1562 SerGlnHisLeuProTyrIleGluGlnGlyMetMetLeuAlaGluGlnPheLysGlnLys
TCTCAGCACTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAG
AGAGTCGTGAATGGCATGTAGCTCGTTCCTACTACGAGCGGCTCGTCAAGTTCGTCTTC
- 1563 DDE1, 1576 RSA1, 1581 TAQ1, 1590 FOK1, 1594 SFAN1, 1612



FIG. 79D

TTHIII2, 1621 HAE111 SAU96,

- 1622 AlaLeuGlyLeuLeuGlnThrAlaSerArgGlnAlaGluValIleAlaProAlaValGln
GCCCTCGGCCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCCCTGCTGTCCAG
CGGGAGCCGGAGGACGTC¹TGGCGCAGGGCAGTCCGTC²CCAATAGCGGGGACGACAGGTC
- 1624 MNL1, 1628 HAE111, 1630 MNL1, 1634 PST1, 1639 TTHIII1,
1642 THA1, 1643 HGA1, 1658 MNL1,
- 1682 ThrAsnTrpGlnLysLeuGluThrPheTrpAlaLysHisMetTrpAsnPheIleSerGly
ACCAACTGGCAAA¹ACTCGAGACCTTCTGGGCGAAGCATATGTGGAACTTCATCAGTGGG
TGGTTGACCGTTT²TGAGCTCTGGAAGACCCGCTTCGTATACACCTTGAAGTAGTCACCC
- 1697 AVA1 XHO1, 1698 TAQ1, 1718 NDE1,
- 1742 IleGlnTyrLeuAlaGlyLeuSerThrLeuProGlyAsnProAlaIleAlaSerLeuMet
ATACAATACTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATG
TATGTTATGAACCGCCCCGAACAGTTGCGACGGA¹CCATTGGGGCGGTAACGAAGTAAC²TAC-
- 1762 HINC11, 1768 BBV FNU4H1, 1772 ECOR11 SCRF1, 1775 BSTE2,
1776 MAE3,
- 1802 AlaPheThrAlaAlaValThrSerProLeuThrThrSerGlnThrLeuLeuPheAsnIle
GCTTTTACAGCTGCTGTCAACAGCCCACTAACCCTAGCCAAACCCCTCCTCTCAACATA
CGAAAATGT¹CGACGACAGTGGTGGGTGATTGGTGATCGGTTTGGGAGGAAGTTGTAT
- 1809 ALWN1 NSPB11 FVU11, 1810 ALU1, 1811 BBV FNU4H1, 1817 MA
E3, 1818 HPH, 1836 MAE1, 1846 MNL1, 1849 MNL1, 1851 MBO11,
- 1862 LeuGlyGlyTrpValAlaAlaGlnLeuAlaAlaProGlyAlaAlaThrAlaPheValGly
TTGGGGGGGTGGGTGGCTGCCCAGCTCGCCGCCCCCGGTGCCGCTACTGCC¹TTGTGGGC
AACCCCCCACCACCGACGGGT²CGAGCGGGGGGGCCACGGCGATGACGGAAACACCCG
- 1877 BBV FNU4H1, 1884 ALU1, 1889 FNU4H1, 1895 NC11 SCRF1, 18
96 HPA11, 1898 BAN1 NLA1V, 1901 FNU4H1, 1919 HAE11, 1920 HHA
1,
- 1922 AlaGlyLeuAlaGlyAlaAlaIleGlySerValGlyLeuGlyLysValLeuIleAspIle
GCTGGCTTAGCTGGCGCGCCATCGGCAGTGTGGACTGGGGAAGGTCTCATAGACATC
CGACCGAATCGAC¹CGCGGGTAGCCGTCACAACCTGACCCCTTCCAGGAGTATCTGTAG
- 1927 DDE1, 1930 ALU1, 1934 AHA11 BAN1 HAE11 NAR1 NLA1V, 1935
HHA1, 1937 FNU4H1, 1966 AVA2 SAU96, 1969 MNL1, 1978 FOK1,
- 1982 LeuAlaGlyTyrGlyAlaGlyValAlaGlyAlaLeuValAlaPheLysIleMetSerGly
CTTGCAGGGTATGGCGGGCGTGGCGGGAGCTCTGTGGCATTCAAGATCATGAGCGGT
GAACGTCCCATACCGCGCCCGCACCGCCCTCGAGAACACCGTAAGTTCTAGTACTCGCCA
- 1995 HHA1, 1996 THA1, 2010 BAN11 BSP1286 HGIA SAC1, 2011 ALU
1, 2021 BSM1, 2029 MBO1 SAU3A, 2032 NLA111, 2039 HPH,
- 2042 GluValProSerThrGluAspLeuValAsnLeuLeuProAlaIleLeuSerProGlyAla
GAGGTCCCTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCTCTCGCCCGGAGCC
CTCCAGGGGAGGTGCCTCT¹TGGACAGTTAGATGACGGCGGTAGGAGAGCGGGCCTCGG
- 2042 MNL1, 2044 AVA2 NLA1V SAU96, 2049 MNL1, 2057 MNL1, 2059
AVA2 SAU96, 2060 TTHIII1, 2062 ECOR11 SCRF1, 2083 FOK1, 208
6 MNL1, 2093 NC11 SCRF1, 2094 HPA11, 2096 NLA1V, 2097 BAN11
BSP1286, 2101 MNL1,
- 2102 LeuValValGlyValValCysAlaAlaIleLeuArgArgHisValGlyProGlyGluGly
CTCGTAGTCGGCGTGGTCTGTGCAGCAATACTGCGCGGCACGTGGCCCCGGGCGAGGGG
GAGCATCAGCGCACAGACAGTCGTTATGACCGCGCGGTGCAACCGGGCCCGCTCCCC
- 2123 BBV FNU4H1, 2134 HHA1, 2136 NAE1, 2137 HPA11, 2142 MAE2
, 2147 HAE111 SAU96, 2149 AVA1 NC11 SCRF1 SMA1, 2150 HPA11 N



FIG. 79E

CI1 SCRF1, 2156 MNL1,

2162 AlaValGlnTrpMetAsnArgLeuIleAlaPheAlaSerArgGlyAsnHisValSer
GCAGTGCAGTGGATGAACCGGCTGATAGCCTTCGCCTCCCGGGGGAACCATGTTTCCCC
CGTCACGTCACCTACTTGGCCGACTATCGGAAGCGGAGGGCCCCCTTGGTACAAAGGGG

2172 FOK1, 2179 HPA11, 2196 MNL1, 2199 AVA1 NC11 SCRF1 SMA1,
2200 HPA11 NC11 SCRF1, 2205 NLA1V, 2210 NLA111,

2222

FIG. 80A

Human 23

GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyArgAla
 1 GGCTTCGCCGACCTCATGGGTACATACCGCTCGTCGGCGCCCTCTTGGAGGCCGTGCC
 ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsn
 61 AGGCCCCTGGCGCACGGCGTCCGGGTTTGGAGACGGCGTGAACATATGCAACAGGGAAC
 CG A
 LeuProGlyCysSerPheSerIlePheLeuLeuAlaLeuLeuSerCysLeuThrValPro
 121 CTTCTGGTTGCTCCTTTTCTATCTTCTCCTTCTGGCCCTACTCTCTTGCCGTGACCGTGCCC
 GA T
 AlaSerAlaTyrGlnValArgAsnSerThrGlyLeuTyrHisValThrAsnAspCysPro
 181 GCTTCAGCCTACCAAGTGGCAACTCTACGGGCTTACCATGTCAACCAATGATGCCCCT
 AsnSerSerIleValTyrGluAlaAlaAspAlaIleLeuHisAlaProGlyCysValPro
 241 AACTCGAGTATGTGTACGAGGCGGCCGATGCCATCCTGTCACGCTCCGGGTGTGTCCCT
 T C
 CysValArgGluAspAsnValSerArgCysTrpValAlaValThrProThrValAlaThr
 301 TCGGTTCCGAGGATAACGCTCTCGAGATGTGGGTGGCGTGACCCCCACGGTGGCCACC
 G T
 LysAspGlyLysLeuProThrThrGlnLeuArgArgHisIleAspLeuLeuValGlySer
 361 AAGGACGGCAAACTCCCCACAAACGAGCTTCGACGTCACATCGATCTGCTTGTCTGGGAGC
 C A
 AlaThrLeuCysSerAlaLeuTyrValGlyAspLeuCysGlySerIlePheLeuValGly
 421 GCCACCTCTGCTCGGCCCTCTACGTGGGGACCTTTGCGGGTCCATCTTTCTTGTCTGGT
 T
 GlnLeuPheThrPheSerProArgArgHisTrpThrThrGlnAspCysAsnCysSerIle
 481 CAACTGTTTACCTTCTCTCCAGGGCCACTGGACGACGACGACTGCAACTGTTCTATC
 C

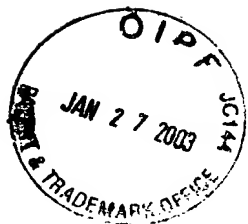


FIG. 80B

541 TyrProGlyHisIleThrGlyHisArgMetAlaTrpAspMetMetMetAsnTrpSerPro
TATCCCGGCCATATAACGGGTACCGCATGGCATGGGATATGATGATGAAC^GTGGTCCCCT

601 ThrAlaAlaLeuValValAlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIle
ACGGCGGCATTGGTAGTAGCTCAGCTGCTCCGGATCCACAGCCATCTTGGACATGATC
^G AG

661 AlaGlyAlaHisTrpGlyValLeuAlaGlyMetAlaTyrPheSerMetValGlyAsnTrp
GCTGGTGCTCACTGGGGAGTCCCTGGGGCATGGCGTATTCTCCATGGTGGGAACTGG
^G

721 AlaLysValLeuValValLeuLeuLeuPheAlaGlyValAlaAspAlaGluThrHisArgThr
GCCAAGGTCCTGTAGTGCTGCTTCTATTGCGGGCTCGACGCGGAAACCCACCGTACC
^G

781 GlyGlySerAlaAlaArgSerThrAlaGlyValAlaSerLeuPheThrProGlyAlaArg
GGGGAGAGTGGCGCCCGCAGCAGCGGTGGAGTTGCTAGTCTCTTCACACCAGCGCTAGG
C T A

841 GlnAsnIleGlnLeuIleAsnThrAsnGlySerTrpHisIleAsnSerThrAlaLeuAsn
CAGAACATCCAGCTGATCAACACCAACGGCAGTTGGCACATCAATAGTACGGCCTTGAAC
AT

901 CysAsnAspSerLeuThrThrGlyTrpLeuAlaGlyLeuPheTyrHisHisLysPheAsn
TGCAATGACAGCCTTACCACCGGCTGGTTAGCGGGCTTTTCTATCACCATAAATTCAAC
A A

961 SerSerGlyCysProGluArgLeuAlaSerCysArgProLeuThrAspPheAlaGln
TCTTCAGGCTGTCCCGAGAGGTTGGCCAGCTGCCGACCCCTCACCGATTGTGCCCAGG
G A



FIG. 81A

Human 27

1 GlyPheAlaAspLeuMetGlyTyrIleProLeuValGlyAlaProLeuGlyGlyAlaAla
GGCTTCGCCGACCTCATGGGTACATTCCGCTCGTCGGCTCCTCTTGGGGCGCTGCC

61 ArgAlaLeuAlaHisGlyValArgValLeuGluAspGlyValAsnTyrAlaThrGlyAsn
AGGGCCCTGGCGCATGGGTCCGGTCTCTGGAAGACGGGTGAACATATGCAACAGGGAAC

121 LeuProGlyCysSerPheSerIlePheLeuLeuAlaLeuSerCysLeuThrValPro
CTTCCTGGTTGCTCTTTCTCTATCTTCCTCTCTGGCTCTGCTCTCTTGCCGTGACCGTGCCC

181 AlaSerAlaTyrGlnValArgAsnSerSerGlyIleTyrHisValThrAsnAspCysPro
GCATCGGCTACCAAGTACGCAACTCCTCGGGCATTTACCATGTACCAATGATTGCCCT

241 AsnSerSerIleValTyrGluThrAlaAspThrIleLeuHisSerProGlyCysValPro
AATTCGAGTATTGTACGAGACGGCCGACACCATCTACACTCTCCGGGTGTGTCCCT
C

301 CysValArgGluGlyAsnAlaSerLysCysTrpValProValAlaProThrValAlaThr
TCCGTTCCGGAGGGTAACGCCCTCGAAATGTTGGTCCGGTAGCCCCCACAGTGGCCACC
G

361 ArgAspGlyAsnLeuProAlaThrGlnLeuArgArgHisIleAspLeuLeuValGlySer
AGGGACGGCAACCTCCCCGCAACGCAGCTTCGACGTCACATCGATCTGCTTGTCTGGGAGT
G

421 AlaThrLeuCysSerAlaLeuTyrValGlyAspLeuCysGlySerValPheLeuValGly
GCCACCCCTTTGCTCGGCCCTCTATGTGGGGACTTGTGTGGGTCTGTCTTTCTTGTCTGGT
C

481 GlnLeuPheThrPheSerProArgArgHisTrpThrThrGlnAspCysAsnCysSerIle
CAACTGTTCACTTTCTCCCCAGGGCCACTGGACAACGCAAGATTGCAACTGCTCTATC
A



FIG. 81B

TyrProGlyHisIleThrGlyHisArgMetAlaTrpAspMetMetMetAsnTrpSerPro
541 TACCCCGCCATATAACGGACACCGCATGGCATGGATATGATGATGAAGTGGTCCCT
ThrAlaAlaLeuValMetAlaGlnLeuLeuArgIleProGlnAlaIleLeuAspMetIle
601 ACAGCAGCGCTGGTAATGGCTCAGCTCAGGATCCCGCAAGCCATCTTGGACATGATC
G
AlaGlyAlaHisTrpGlyValLeuAlaGlyIleAlaTyrPheSerMetValGlyAsnTrp
661 GCTGGTGCTCACTGGGGAGTCCTAGCGGCATAGCGTATTTCTCCATGGTGGGAACCTGG
AlaLysValLeuValValLeuLeuLeuPheAlaGlyValAspAlaThrThrTyrThrThr
721 GCGAAGGTCCTGGTGGTGTGTGTGCTTTGCGGCGTCGATGCGACAACCTATACCACC
GlyGlyAsnAlaAlaArgThrThrGlnAlaLeuThrSerPhePheSerProGlyAlaLys
781 GGGGGAATGCTGCCAGGACCAAGCAGGCGCTCACCAGTTTTTTCAGCCCCAGGCCAAG
GlnAspIleGlnLeuIleAsnThrAsnGlySerTrpHisIleAsnArgThrAlaLeuAsn
841 CAGGATATCCAGCTGATCAACACCAACGCGCAGTTGGCACATCAATCGCACGGCCTTGAAC
G
CysAsnAlaSerLeuAspThrGlyTrpValAlaGlyLeuPheTyrTyrHisLysPheAsn
901 TGTAATGCGAGCCTCGACACTGGCTGGGTAGCGGGCTCTTCTATTACCACAAATTCAAC
T
SerSerGlyCysProGluArgMetAlaSerCysArgProLeuAlaAspPheAspGln
961 TCTTCAGGCTGCCCCGAGAGGATGCCACGCTGTAGGCCCTTCCGATTTCGACCAGG
C



FIG. 72M

4321	MetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThrCysValThrGln ATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGCAATACGTGTGTACCCAG TACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTATGCACACAGTGGGTC
4381	ThrValAspPheSerLeuAspProThrPheThrIleGluThrIleThrLeuProGlnAsp ACAGTCGATTTCAGCCTTGACCCCTACCTTCACCATTGAGACAAATCACGTCCTCCCCAGGAT TGTGAGCTAAAGTCGGAACCTGGGATGGAGTGGAAGTGTAACCTCTGTAGTGCAGGGGGTCCCTA
4441	AlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArg GCTGTCTCCCGCACTCAACGTCGGGCGAGGACTGGCAGGGGAAGCCAGGCATCTACAGA CGACAGGGCGGTGAGTTGCAGCCCCGCTCTGACCGTCCCCCTTCGGTCCGTAGATGTCT
4501	PheValAlaProGlyGluArgProSerGlyMetPheAspSerSerValLeuCysGluCys TTTGTGGCACCGGGGAGCGCCCTCCGGCATGTTCGACTCGTCCGCTCTGTGTGAGTGC AAACACCGTGGCCCCCTCGCGGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCAGC
4561	TyrAspAlaGlyCysAlaTrpTyrGluLeuThrProAlaGluThrThrValArgLeuArg TATGACGCAGGCTGTGCTTGGTATGAGCTCACGCCCGCCGAGACTACAGTTAGGCTACGA ATACTGCGTCCGACACGAACCATATACTCGAGTGGGGGGCTCTGATGTCAATCCGATGCT
4621	AlaTyrMetAsnThrProGlyLeuProValCysGlnAspHisLeuGluPheTrpGluGly GCGTACATGAACACCCCGGGGCTTCCCGTGTGCCAGGACCATCTTGAAATTTGGGAGGGC CGCATGTACTTGTGGGGCCCCCGAAGGGCACACGGTCTCTGGTAGAACTTAAAAACCTCCCG
4681	ValPheThrGlyLeuThrHisIleAspAlaHisPheLeuSerGlnThrLysGlnSerGly GTCTTTACAGGCCCTCACTCATATAGATGCCCACTTTCTATATCCAGACAAAGCAGAGTGGG CAGAAATGTCCGGAGTGAGTATATCTACGGGTGAAGATAGGGTCTGTTTCTGTCTCACCC

FIG. 72N

4741	GluAsnLeuProTyrLeuValAlaTyrGlnAlaThrValCysAlaArgAlaGlnAlaPro GAGAACCTTCCTTACCTGGTAGCGTACCAAGCCACCGTGTGCGCTAGGGCTCAAGCCCTT CTC TTGGAAGGAATGGACCATCGCATGGTTCGGTGGCACACGCGATCCCGAGTTCGGGGGA
4801	ProProSerTrpAspGlnMetTrpLysCysLeuIleArgLeuLysProThrLeuHisGly CCCCCATCGTGGGACCAAGATGTGGAAGTGTTCGATTCGCCCTCAAGCCACCTCCATGGG GGGGTAGCACCCCTGGTCTACACCTTCACAACTAAGCGGAGTTCGGTGGGAGGTATCCC
4861	ProThrProLeuTyrArgLeuGlyAlaValGlnAsnGluIleThrLeuThrHisPro CCAACACCCCTGCTATACAGACTGGCGGCTGTTCAGAAATGAATCAACCTGACGCCACCCA GGTTGTGGGACGATATGTCTGACCCCGCACAAAGTCTTACTTTAGTGGGACTGCGTGGGT
4921	ValThrLysTyrIleMetThrCysMetSerAlaAspLeuGluValValThrSerThrTrp GTCACCAAAATACATCATGACATGCATGTCCGCCGACCTGGAGTCTGTCACGAGCACCTGG CAGTGGTTTATGTAGTACTGTACGTACAGCCCGCTGGACCTCCAGCAGTGTCTCGTGGACC
4981	ValLeuValGlyGlyValLeuAlaAlaLeuAlaAlaTyrCysLeuSerThrGlyCysVal GTGCTCGTTGGCGGCTCCTGGCTGCTTTGGCCGCGTATTCCTGTCAACAGGCTGCGTG CACGAGCAACCGCCGAGGACCCGACGAAACCGCCGCATAACGGACAGTTGTCCGACGCAC
5041	ValIleValGlyArgValValLeuSerGlyLysProAlaIleIleProAspArgGluVal GTCATAGTGGGCAGGTCGTCCTTGTCCGGGAAGCCGGCAATCATACCTGACAGGGAAGTC CAGTATCACCCGTCGCCAGCAGAAACAGGCCCTTCGGCCGTTAGTATGGACTGTCCCTTCAG
5101	LeuTyrArgGluPheAspGluMetGluGluCysSerGlnHisLeuProTyrIleGluGln CTCTACCGAGAGTTCGATGAGATGGAAGAGTGTCTCTCAGCACTTACCGTACATCGAGCAA GAGATGGCTCTCAAGCTACTCTACCTTCTCACGAGAGTCGTGAATGGCATGTAGCTCGTT



FIG. 720

5161 GlyMetMetLeuAlaGluGlnPheLysGlnLysAlaLeuGlyLeuLeuGlnThrAlaSer
GGGATGATGCTCGCGAGCAGTTCAAGCAGAAAGGCCCTCGGCCCTCCTGCAGACCGCGTCC
CCCTACTACGAGCGGCTCGTCAAGTTCGTCTCCGGGAGCCGGAGGACGCTCTGGCGCAGG

5221 ArgGlnAlaGluValIleAlaProAlaValGlnThrAsnTrpGlnLysLeuGluThrPhe
CGTCAGGCAGAGGTTATCGCCCCGTGCTGCCAGACCAACTGGCAAAACTCGAGACCTTC
GCAGTCCGTCTCCAATAGCGGGGACGACAGGCTGTGTTGACCGTTTTTTGAGCTCTGGAAG

5281 TrpAlaLysHisMetTrpAsnPheIleSerGlyIleGlnTyrLeuAlaGlyLeuSerThr
TGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATACTTGGCGGGCTTGTCACAG
ACCGCTTCGTATACACCTTGAAGTAGTCACCCCTATGTTATGAACCGCCCCGAACAGTTGC

5341 LeuProGlyAsnProAlaIleAlaSerLeuMetAlaPheThrAlaAlaValThrSerPro
CTGCCGTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTACAGCTGTCTCACCAGCCCA
GACGGACCATTTGGGGCGGTAACGAAGTAAC TACCGAAATGTCCGACGACAGTGGTCTGGGT

5401 LeuThrThrSerGlnThrLeuLeuPheAsnIleLeuGlyGlyTrpValAlaAlaGlnLeu
CTAACCCACTAGCCAAACCCCTCCTCTTCAACATATTGGGGGGGTGGGTGGTCCCCAGCTC
GATTGGTGATCGGTTTGGGAGGAGAAGTTGTATAACCCCCCCCCACCCACCGGGTCTGAG

5461 AlaAlaProGlyAlaAlaThrAlaPheValGlyAlaGlyLeuAlaGlyAlaAlaIleGly
GCCGCCCGCGGTGCCGCTACTGCCCTTGTGGCGCTGGCTTAGCTGGCGCCGCGCATCGGC
CGCGGGGGCCACGGCGATGACGGAAACACCCCGGACCGAATCGACCGCGGGGTAGCCG



FIG. 72P

5521 SerValGlyLeuGlyLysValLeuIleAspIleLeuAlaGlyTyrGlyAlaGlyValAla
AGTGTGGACTGGGAAGTCTCATAGACATCTTGACAGGTATGGCGGGCTGGCG
TCACAACCTGACCCCTCCAGGAGTATCTGTAGGAACGTCCCATACCGCGCCCGCACCCG

5581 GlyAlaLeuValAlaPheLysIleMetSerGlyGluValProSerThrGluAspLeuVal
GGAGCTCTTGTGGCATTCAAGATCATGACGGTGAGTCCCCTCCACGGAGGACCTGGTC
CCTCGAGAACACCGTAAGTTCTAGTACTCGCCACTCCAGGGAGGTGCTCTCTGGACCCAG

5641 AsnLeuLeuProAlaIleLeuSerProGlyAlaLeuValValGlyValValCysAlaAla
AATCTACTGCCCCGCATCCTCTCGCCCGGAGCCCTCGTAGTCGGCGTGGTCTGTGCAGCA
TTAGATGACGGCGGTAGGAGAGCGGGCCTCGGGAGCATCAGCCGCACCCAGACACGTCGT

5701 IleLeuArgArgHisValGlyProGlyGluGlyAlaValGlnTrpMetAsnArgLeuIle
ATACTGCGCGGCACGTTGGCCCGGCGAGGGGCGAGTGCAGTGGATGAACCGGCTGATA
TATGACGCGCGGTGCAACCGGGCCCGCTCCCCCGTCACTACCTACTTGGCCGACTAT

5761 AlaPheAlaSerArgGlyAsnHisValSerProThrHisTyrValProGluSerAspAla
GCCTTCGCCTCCGGGGGAACCATGTTTCCCCACGCACCTACGTGCCGGAGAGCGATGCA
CGGAAGCGGAGGGCCCCCTTGGTACAAAGGGGTGCGTGATGCACGGCCCTCTCGCTACGT

5821 AlaAlaArgValThrAlaIleLeuSerSerLeuThrValThrGlnLeuLeuArgArgLeu
GCTGCCCGCGTCACTGCCATACTACGAGCCCTCACTGTAAACCCAGCTCCTGAGGCGACTG
CGACGGGCGCAGTGACGGTATGAGTCGTGGAGTGACATTGGGTCGAGGACTCCGCTGAC



FIG. 72Q

5881 HisGlnTrpIleSerSerGluCysThrThrProCysSerGlySerTrpLeuArgAspIle
CACCAGTGGATAAGCTCGAGTGTACCACTCCATGCTCCGGTTCCTGGCTAAGGACATC
GTGGTCACCTATTTCGAGCCTCACATGGTGAGGTACGAGGCCAAGGACCGATTCCCTGTAG

5941 TrpAspTrpIleCysGluValLeuSerAspPheLysThrTrpLeuLysAlaLysLeuMet
TGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTGGCTAAAAGCTAAGCTCATG
ACCTGACCTATACGCTCCACAACCTCGCTGAAATTCTGGACCGATTTCGATTTCGAGTAC

6001 ProGlnLeuProGlyIleProPheValSerCysGlnArgGlyTyrLysGlyValTrpArg
CCACAGCTGCCCTGGATCCCCCTTTGTGTCTCCAGCGGGGTATAAGGGGTCTGGCGGA
GGTGTCGACGGACCCCTAGGGGAAACACAGGACGGTCCGCCCATATTCCCCAGACCGCT

6061 ValAspGlyIleMethIsthrArgCysHisCysGlyAlaGluIleThrGlyHisValLys
GTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGAGATCACTGGACATGTCAA
CACCTGCCGTAGTACGTGTGAGCGACGGTGACACCTCGACTCTAGTGACCTGTACAGTTT

6121 AsnGlyThrMetArgIleValGlyProArgThrCysArgAsnMetTrpSerGlyThrPhe
AACGGGACGATGAGGATCGTCGGTCTCCTAGGACCTGCAGGAACATGTGGAGTGGACCTTC
TTGCCCTGCTACTCCTAGCAGCCAGGATCCTGGACGTCCTTGTTACACCTCACCCCTGGAAG

6181 ProIleAsnAlaTyrThrThrGlyProCysThrProLeuProAlaProAsnTyrThrPhe
CCCATTAATGCCTACACACGGGCCCCCTGTACCCCCCTTCCTGCGCCGAACATACACGTTT
GGTAATTACGGATGTGGTGGCCCCGGGACATGGGGGGAAGGACGCGGCTTGATGTGCAAG

FIG. 72R

6241	AlaLeuTrpArgValSerAlaGluGluTyrValGluIleArgGlnValGlyAspPheHis GCGCTATGGAGGGTGTCTGCAGAGGAATATGTGAGATAAGGCAGGTGGGGACTTCCAC CGGATACCTCCACAGACGTCTCCTTATACACCTCTATTCCGTCCACCCCTGAAGGTG
6301	TyrValThrGlyMetThrThrAspAsnLeuLysCysProCysGlnValProSerProGlu TACGTGACGGGTATGACTACTGACAAATCTCAAATGCCGTGCCAGGTCCCATCGCCCGAA ATGCACTGCCCATACTGATGACTGTAGAGTTTACGGGCACGGTCCAGGTAGCGGGCTT
6361	PhePheThrGluLeuAspGlyValArgLeuHisArgPheAlaProProCysLysProLeu TTTTTTCACAGAAATTGGACGGGTGCGCCTACATAGGTTTGGCCCCCTGCAAGCCCTTG AAAAAGTGTCTTAACCTGCCCCACGGGGATGTATCCAAACGGGGGGACGTTTCGGGAAC
6421	LeuArgGluGluValSerPheArgValGlyLeuHisGluTyrProValGlySerGlnLeu CTGCGGGAGGAGGTATCATTCAGAGTAGGACTCCACGAATACCGGTAGGTTCGCAATTA GACGCCCTCCTCCATAGTAAGTCTCATCCTGAGGTGCTTATGGGCCATCCAGCGTTAAT
6481	ProCysGluProGluProAspValAlaValLeuThrSerMetLeuThrAspProSerHis CCTTGCGAGCCCGAACCGGACGTGGCCGTGTGACGTCCATGCTCACTGATCCCTCCCAT GGAAACGCTCGGGCTTGGCCTGCACCGGCACAACTGCAGGTACGAGTACTAGGGAGGGTA
6541	IleThrAlaGluAlaAlaGlyArgArgLeuAlaArgGlySerProProSerValAlaSer ATAACAGCAGAGCGCGCGCGGCGAAGGTTGGCGAGGGGATCACCCCTCTGTGGCCAGC TATTGTCTGCTCCGCGCGCGCGCTTCCAACCGCTCCCTAGTGGGGGAGACACCGGTCG

FIG. 72S

6601 SerSerAlaSerGlnLeuSerAlaProSerLeuLysAlaThrCysThrAlaAsnHisAsp
TCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAACTTGCAACCGCTAACCATGAC
AGGAGCCGATCGGTCGATAGCGGAGGTAGAGAGTCCGTTGAACGTGGCGATTGGTACTG

6661 SerProAspAlaGluLeuIleGluAlaAsnLeuLeuTrpArgGlnGluMetGlyGlyAsn
TCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAGGCAGGAGATGGCGGCAAC
AGGGGACTACGACTCGAGTATCTCCGGTTGGAGGATACCTCCGTCTCTACCCGCCGTTG

6721 IleThrArgValGluSerGluAsnLysValValIleLeuAspSerPheAspProLeuVal
ATCACCCAGGTTGAGTCAGAAACAAAGTGGTGATTCTGGACTCCTTCGATCCGCTTGTG
TAGTGGTCCCAACTCAGTCTTTTGTTCACCACTAAGACCTGAGGAAGCTAGCGGAACAC

6781 AlaGluGluAspGluArgGluIleSerValProAlaGluIleLeuArgLysSerArgArg
GCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCAGAAATCCTGCGGAAGTCTCGGAGA
CGCCTCCTCCTGCTCGCCCTCTAGAGGCATGGCGTCTTTAGGACGCTTCAGAGCCTCT

6841 PheAlaGlnAlaLeuProValTrpAlaArgProAspTyrAsnProProLeuValGluThr
TTCGCCCAGGCCCTGCCCGTTTGGCGCGCGGCGGACTATAACCCCCCGCTAGTGGAGACG
AAGCGGTCCGGGACGGGCCAAACCCGCGCGGCTGATATTGGGGGGCGGATCACCTCTGC

6901 TrpLysLysProAspTyrGluProProValValHisGlyCysProLeuProProLys
TGGAAAGCCCGACTACGAACCACTGTGTGTCATGGCTGTCCGCTTCCACCTCCAAAG
ACCTTTTTCGGGCTGATGCTTGGTGACACCAAGTACCGACAGGCCGAAGGTGGAGTTTC

6961 SerProProValProProArgLysLysArgThrValValLeuThrGluSerThrLeu
TCCCCCTCCTGTGCTCCGCTCGGAAGAACGCGGACGGTGGTCTCTACTGAATCAACCTA
AGGGAGGACACGGAGCGGAGCCTTCTTCGCTGCCACCAAGGAGTGACTTAGTTGGGAT



FIG. 72T

7021 SerThrAlaLeuAlaGluLeuAlaThrArgSerPheGlySerSerSerThrSerGlyIle
TCTACTGCCCTTGGCCGAGCTGCCACCAGAAGCTTTGGCAGCTCCTCAACTTCCGGCATTT
AGATGACGGAAACCGGCTCGAGCGGTGGTCTTCGAAACCGTCGAGGAGTTGAAGGCCGTAA

7081 ThrGlyAspAsnThrThrSerSerGluProAlaProSerGlyCysProProAspSer
ACGGCGACAATACGACAACATCCTCTGAGCCGCCCTTCTGGCTGCCCTCCGACTCC
TGCCCGCTGTTATGCTGTGTAGGAGACTCGGGGGGAAGACCGACGGGGGCTGAGG

7141 AspAlaGluSerTyrSerSerMetProProLeuGluGlyGluProGlyAspProAspLeu
GACGCTGAGTCCTATTCTCCATGCCCCCTGGAGGGGAGCCTGGGATCCGGATCTT
CTGGACTCAGGATAAGGAGGTACGGGGGACCTCCCCCTCGGACCCCTAGGCCCTAGAA

7201 SerAspGlySerTrpSerThrValSerSerGluAlaAsnAlaGluAspValValCysCys
AGCGACGGGTCAATGGTCAACGGTCAGTAGTAGGCCAACCGGAGGATGTCGTGTGCTGC
TCGCTGCCCAGTACCAGTTGCCAGTCATCACTCCGGTTGGCCTCCTACAGCACACGACG

7261 SerMetSerTyrSerTrpThrGlyAlaLeuValThrProCysAlaAlaGluGluGlnLys
TCAATGTCTTACTCTTGACAGGCGCACTCGTCACCCCGTCGCCCGGGAAGAACAGAAA
AGTTACAGAAATGAGAACCTGTCCGGTGAGCAGTGGGGCACGGCGCCTTCTTGCTTT

7321 LeuProIleAsnAlaLeuSerAsnSerLeuLeuArgHisAsnLeuValTyrSerThr
CTGCCCCATCAATGCACATAAGCAACTCGTTGTCTACGTCAACCAATTTGGTGATATCCACC
GACGGGTAGTTACGTGATTCTGTTGAGCAACGATGCAGTGGTGTAAACCATAGGTGG

FIG. 72U

7381	ThrSerArgSerAlaCysGlnArgGlnLysLysValThrPheAspArgLeuGlnValLeu ACCTCAGCAGTGCTTGCCAAAGGCAGAAAGTCAATTTGACAGACTGCAAGTTCTG TGGAGTGGCTCACGAACGGTTTCCGTCTTCTTTCAGTGTAACGTGTCTGACGTTCAAGAC
7441	AspSerHisTyrGlnAspValLeuLysGluValLysAlaAlaSerLysValLysAla GACAGCCATTACCAAGGACGTACTCAAGGAGGTTAAAGCAGCGCGCTCAAAAGTGAAGGCT CTGTCCGGTAATGGTCCCTGCATGAGTTCCTCCAATTTTCGTGCGCGCAGTTTTCACCTTCCGA
7501	AsnLeuLeuSerValGluGluAlaCysSerLeuThrProProHisSerAlaLysSerLys AACTTGCTATCCGTAGAGGAAGCTTGACAGCCTTGACGCCCCCACACTCAGCCAAATCCAAG TTGAACGATAGGCATCTCCTTCGAACGTCGGACTGCGGGGGTGTGAGTCGGTTAGGTTTC
7561	PheGlyTyrGlyAlaLysAspValArgCysHisAlaArgLysAlaValThrHisIleAsn TTTGGTTATGGGGCAAAGACGTCCGTGCGCATGCCAGAAAGCCGTAACCCACATCAAC AAACCAATACCCCGTTTCTGTCAGGCAACGGTACGGTCTTTTCCGGCATTTGGGTGTAGTTG
7621	SerValTrpLysAspLeuLeuGluAspAsnValThrProIleAspThrThrIleMetAla TCCGTGTGGAAGACCTTCTGGAAGACACAATGTAAACACCAATAGACACTACCATCATGGCT AGGCACACCTTTCTGGAAGACCTTCTGTGTACATTGTGGTTATCTGTGATGGTAGTACCGA
7681	LysAsnGluValPheCysValGlnProGluLysGlyGlyArgLysProAlaArgLeuIle AAGAACCAGAGTTTCTGCGTTTCAGCCTGAGAAAGGGGGTTCGTAAGCCAGCTCGTCTCATC TTCTTGCTCCAAAGACGCAAGTCGGACTCTTCCCCCCCAGCATTCGGTCGAGCAGAGTAG
7741	ValPheProAspLeuGlyValArgValCysGluLysMetAlaLeuTyrAspValValThr GTGTTCCCCGATCTGGCGGTGCGCGTGTGCGAAAGATGGCTTTGTACGACGTGGTTACA CACAAAGGGGCTAGACCCGACGGCACACGCTTTTCTACCGAAACATGTCTGCACCAATGT



FIG. 72V

7801 LysLeuProLeuAlaValMetGlySerSerTyrGlyPheGlnTyrSerProGlyGlnArg
AAGCTCCCTTGGCCGTGATGGGAAGCTCCTACGGATTCCAATACTCACCAGGACAGCGG
TTCGAGGGGAACCGGCACTACCTTCGAGGATGCCCTAAGGTTATGAGTGGTCTGTCCGCC

7861 ValGluPheLeuValGlnAlaTrpLysSerLysLysThrProMetGlyPheSerTyrAsp
GTTGAATTCCCTCGTGCAAGCGTGGAAGTCCAAGAAACCCCAATGGGGTTCTCGTATGAT
CAACTTAAGGAGCACGTTGCACCTTCAGGTTCTTTTGGGGTTACCCCAAGAGCATACTA

7921 ThrArgCysPheAspSerThrValThrGluSerAspIleArgThrGluGluAlaIleTyr
ACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCGTACGGAGGAGGCAATCTAC
TGGGCGACGAAACTGAGGTGTCAGTACTCTCGTGTAGGCATGCCCTCCTCCGTTAGATG

7981 GlnCysCysAspLeuAspProGlnAlaArgValAlaIleLysSerLeuThrGluArgLeu
CAATGTTGTGACCTCGACCCCAAGCCCGCGTGGCCATCAAGTCCCTCACCGAGAGGCTT
GTTACAACACTGGAGCTGGGGGTTCCGGGGCCACCGGTAGTTCAGGGAGTGGCTCTCCGAA

8041 TyrValGlyGlyProLeuThrAsnSerArgGlyGluAsnCysGlyTyrArgArgCysArg
TATGTTGGGGCCCTCTTACCAATTCAAGGGGGAGAACTCGGGCTATCGCAGGTGCCGC
ATACAACCCCCGGGAGAAATGGTTAAGTTCCCCCTCTTGACGCGCGATAGCGTCCACGGCG

8101 AlaSerGlyValLeuThrThrSerCysGlyAsnThrLeuThrCysTyrIleLysAlaArg
GCGAGCGGCGTACTGACAACTAGCTGTGGTAACACCCCTCACTTGCTACATCAAGGCCCGG
CGCTCGCCGCATGACTGTTGATCGACACCATTTGTGGGAGTGAACGATGTAGTTCGGGGCC



FIG. 72W

8161 AlaAlaCysArgAlaAlaGlyLeuGlnAspCysThrMetLeuValCysGlyAspAspLeu
GCAGCCTGTCGAGCCGCGAGGCTCCAGGACTGCACCATGCTCGTGTGGCGACGACTTA
CGTCGGACAGCTCGGCGTCCCGAGGTCCTGACGTGGTACGAGCACACACCGCTGCTGAAT

8221 ValValIleCysGluSerAlaGlyValGlnGluAspAlaAlaSerLeuArgAlaPheThr
GTCGTTATCTGTGAAGCGGGGGTCCAGGAGGACGCGGAGCCTGAGAGCCTTCACG
CAGCAATAGACACTTTCGCGCCCCCAGGTCTCTCTGCGCCGCTCGGACTCTCGGAAGTGC

8281 GluAlaMetThrArgTyrSerAlaProProGlyAspProProGlnProGluTyrAspLeu
GAGGCTATGACCAAGTACTCCGCCCCCTGGGGACCCCCACAAACCAGAAATACGACTTG
CTCCGATACTGGTCCATGAGCGGGGGGACCCCTGGGGGTGTGGTCTTATGCTGAAC

8341 GluLeuIleThrSerCysSerSerAsnValSerValAlaHisAspGlyAlaGlyLysArg
GAGCTCATAAACATCATGCTCCTCCAACGTGTCAAGTCGCCACGACGCGCGCTGGAAAGAGG
CTCGAGTATTGTAGTACGAGGAGGTGCACAGTCAGCGGGTGTCTCGCGACCTTTCTCC

8401 ValTyrTyrLeuThrArgAspProThrThrProLeuAlaArgAlaAlaTrpGluThrAla
GTCTACTACCTCACCCGTGACCCCTACAACCCCTCGCGAGAGCTGCGTGGGAGACAGCA
CAGATGATGGAGTGGGCACCTGGGATGTTGGGGGAGCGCTCTCGACGACCCCTCTGTCGT

8461 ArgHisThrProValAsnSerTrpLeuGlyAsnIleIleMetPheAlaProThrLeuTrp
AGACACACTCCAGTCAATTCTCTGGCTAGGCAACATAATCATGTTGCCCCACACTGTGG
TCTGTGTGAGGTCAAGTAAAGGACCGATCCGTTGTATTAGTACAAACGGGGGTGTGACACC



FIG. 72Y

8881 AlaAlaGlyGlnLeuAspLeuSerGlyTrpPheThrAlaGlyTyrSerGlyGlyAspIle
GCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTCACGGCTGGCTACAGCGGGGAGACATT
CGGCGACCCGGTCGACCTGAACAGGCCGACCAAGTGCCGACCGATGTCGCCCCCTCTGTAA

8941 TyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCys
TATCACAGCGTGCTCTCATGCCCGGCCCGCTGGATCTGGTTTGCCC
ATAGTGTGCACAGAGTACGGGCCGGCGACCTAGACCAAAACGGG



1 GluPheGlySerValIleProThrSerGlyAspValValValAlaThrAspAlaLeu
GAATTCGGGTCCGTCATCCCGACCAGCGCGATGTTGTCGTCGTGGCAACCGATGCCCTC
CTTAAGCCCAGGCAGTAGGGCTGGTCGCCGCTACAACAGCAGCACCGTTGGCTACGGGAG
1 ECOR1, 7 NLA1V, 8 AVA2 SAU96, 15 FOK1, 24 NSPB11, 26 FNU4H
1, 52 SFAN1, 57 MNL1, 60 NLA111,
61 MetThrGlyTyrThrGlyAspPheAspSerValIleAspCysAsnThrCysValThrGln
ATGACCGGCTATACCGGCGACTTCGACTCGGTGATAGACTGCAATACGTGTGTCACCCAG
TACTGGCCGATATGGCCGCTGAAGCTGAGCCACTATCTGACGTTATGCACACAGTGGGTC
65 HPA11, 74 HPA11, 83 TAQ1, 85 HINF1, 90 HPH, 106 AFL111 MA
E2, 112 MAE3, 113 HPH,
121 ThrValAspPheSerLeuAspProThrPheThrIleGluThrIleThrLeuProGlnAsp
ACAGTCGATTTTCAGCCTTGACCCTACCTTCACCATTGAGACAATCACGCTCCCCAAGAT
TGTCAGCTAAAGTCGGAAGTGGGATGGAAGTGGTAACTCTGTTAGTGCAGGGGGTTCTA
125 TAQ1, 149 HPH, 178 SFAN1,
181 AlaValSerArgThrGlnArgArgGlyArgThrGlyArgGlyLysProGlyIleTyrArg
GCTGTCTCCCGCACTCAACGTCGGGGCAGGACTGGCAGGGGGAAGCCAGGCATCTACAGA
CGACAGAGGGCGTGAGTTGCAGCCCCGTCCTGACCGTCCCCCTTCGGTCCGTAGATGTCT
198 MAE2, 226 ECOR11 SCRF1, 230 SFAN1,
241 PheValAlaProGlyGluArgProProAlaCysSerThrArgProSerSerValSerAla
TTTGTGGCACCGGGGAGCGCCCTCCGGCATGTTGACTCGTCCGTCCTCTGTGAGTGCC
AAACACCGTGGCCCCCTCGCGGGAGGCCGTACAAGCTGAGCAGGCAGGAGACACTCACGG
246 BAN1 NLA1V, 250 HPA11 NC11 SCRF1, 257 HAE11, 258 HHA1, 2
62 MNL1, 265 HPA11, 268 NSPC1, 269 NLA111, 274 TAQ1, 276 HIN
F1, 287 MNL1, 296 BSP1286,
301 ArgIle
CGAATTC
GCTTAAG
302 ECOR1,
361

FIG. 74

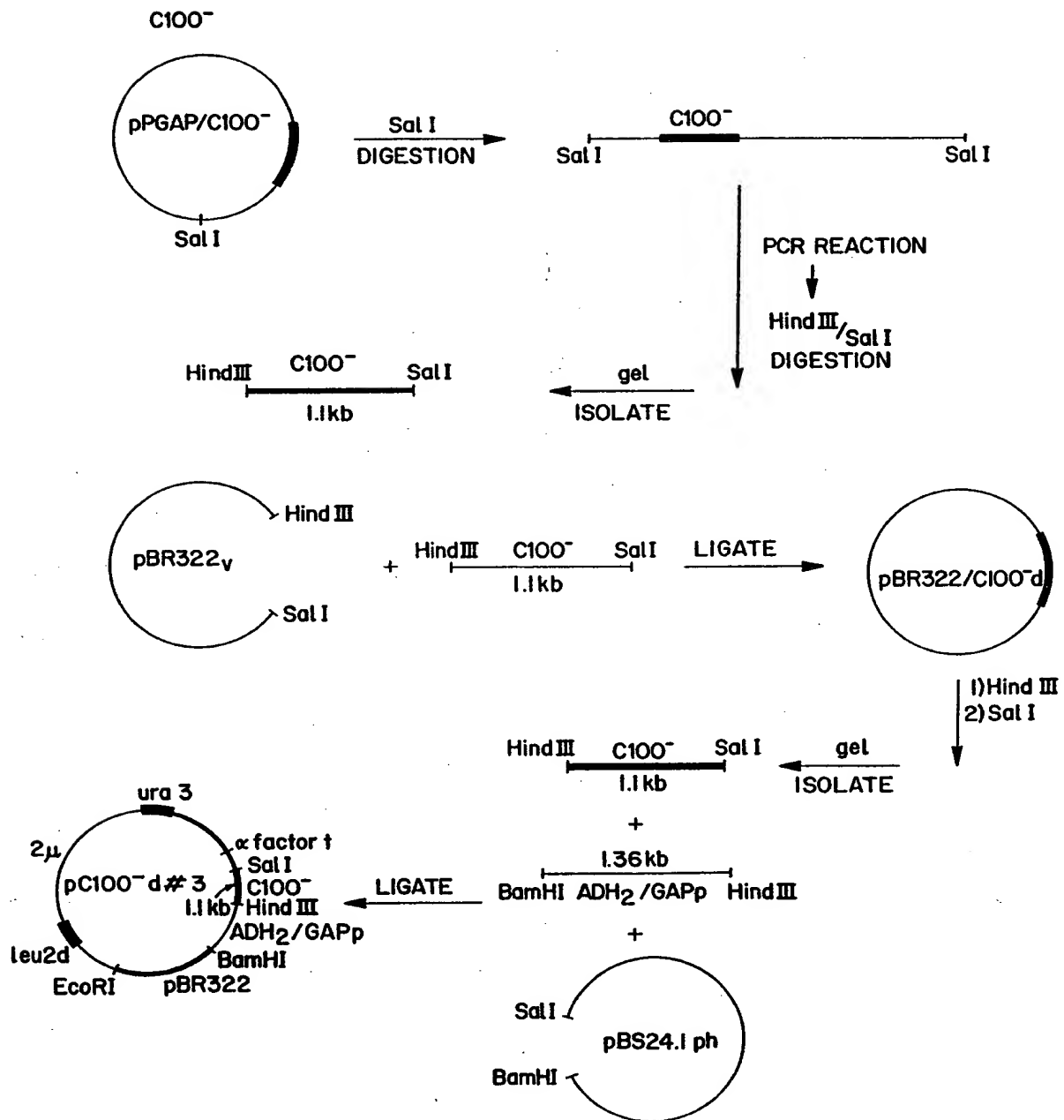


FIG. 75

-----Overlap with 6k-----
TyrHisSerValSerHisAlaArgProArgTrpIleTrpPheCysLeuLeuLeuAla
1 TTATCACAGCGTGTCTCATGCCCCGCGCTGGATCTGGTTTGGCTACTCCTGCTTGC
AATAGTGTGCGCACAGAGTACGGGCGGGCGACCTAGACCAAAACGGATGAGGACGAACG
AlaGlyValGlyIleTyrLeuLeuProAsnArgOP
61 TGCAGGGGTAGGCATCTACCTCCTCCCCAACCGATGAAGGTTGGGGTAAACACTCCGGCC
ACGTCCCCCATCCGTAGATGGAGGAGGGGTTGGCTACTTCCAAACCCCAATTGTGAGGCCGG
121 T
A



FIG. 76





1. human 27 2. HCV 1 3. human 23 **FIG. 82A**

1 CGCCTTCCCGACCTCATGGGGTACATCCGCTGTCGGCGcTcCTTGGggGCGcCTGCCAGGGccCTGcc

1 CGGCTTCGCCGACCTCATGGGGTACATACCcCTGTCGGCGccCCTCTTGGAGGGCGcCTGCCAGGGccCTGcc

1 CGGCTTCGCCGACCTCATGGGGTACATACCcCTGTCGGCGccCCTCTTGGAGGGCGcCTGCCAGGGccCTGcc

73 GCATGGCGTCCGGGTTCTGAAGACGGCGTGAACCTATGCAACAGGGAACCTTCCTGGTTGCTTCTCTAT

73 GCATGGCGTCCGGGTTCTGAAGACGGCGTGAACCTATGCAACAGGGAACCTTCCTGGTTGCTTCTCTAT
*** *****
73 GCAcGGCGTCCGGGTTtTGAAGAcGGCGTGAACCTATGCAACAGGGAACCTTCCTGGTTGCTcTtTCTAT

145 CTTCCTTCGGcTCTGCTCTCTGcCTGACcGTGCCCGcATCGGcCTACCAAGTAcCCAACCTCcCGGcAT

145 CTTCCTTCGGcCCTGCTCTCTGcCTGAcTGTGCCCGCTTCGGcCTACCAAGTAcCCAACCTCcCGGcCT

145 CTTCCTTCGGcCCTAcTCTCTGcCTGAcCGTGCcCCTTCAGcCTACCAAGTAcCCAACCTCcCGGcCT

217 TTACCAcGTCAcCAATGATTCcCCTAAcTcGAGTATGTGTACGAGAcGGcCGCAcCATCTcACAcTCTCC

217 TTACCAcGTCAcCAATGATTCcCCTAAcTcGAGTATGTGTACGAGAcGGcCGCAcCATCTcGCAcACTCC

217 TTACCAcGTCAcCAATGATTCcCCTAAcTcGAGTATGTGTACGAGAcGGcCGCAcCATCTcGCAcGCTCC

289 GGGGTGTCTCCCTTGGCGTTCGcGAGGATAcGcTCTGAGATGTGGGTGCGGTGAcCCcAcGGTGcCCAc

289 GGGGTGTCTCCCTTGGCGTTCGcGAGGATAcGcTCTGAGATGTGGGTGCGGTGAcCCcAcGGTGcCCAc

289 GGGGTGTCTCCCTTGGCGTTCGcGAGGATAcGcTCTGAGATGTGGGTGCGGTGAcCCcAcGGTGcCCAc

FIG. 82B

361 CAGGACGGCAACTCCCCGCAACGCAAGCTTCGACGTACATCGATCTGTGCGGAGtGCCACCTTtG

 361 CAGGAtGGCAAACTCCCCGgACGCAAGCTTCGACGTACATCGATCTGTGCGGAGCGCCACCTTtG
 ** ***
 361 CAAGACGGCAAACTCCCCaCAACGCAAGCTTCGACGTACATCGATCTGTGCGGAGCGCCACCTTtG
 433 CTCGCCCCCTATgtGGGGACtTGTGGGtCTGTCTTCTTGTGCGGtCAACTGTtCACTTCTCCCCAG

 433 tTCGCCCCCTTACGTGGGGACCTGTGGGtCTGTCTTCTTGTGCGGcCAACTGTtCACTTCTCCAG

 433 CTCGCCCCCTTACGTGGGGACCTtTGGGtCcaTCTTCTTGTGCGGtCAACTGTtLACTTCTCCAG
 505 GCGCCACTGACaACGCAAGATTGCAActGTCTATCTAaCCCCGgCATATAAGGgaCACCGCAtGSCATG

 505 GCGCCACTGACGACGCAAGgtTGCAAtGTCTATCTAaTCCCGgCATATAAGGgtCACCGCAtGSCATG

 505 GCGCCACTGACGACGCAAGgaCTGCAActTtCTATCTAaTCCCGgCATATAAGGgtCACCGCAtGSCATG
 577 GGATATGATGATGAActGTCTCCCTTACgCAcGCGtGTATAGCTCAGCTCAGATCCCGCAAGCCAT

 577 GGATATGATGATGAActGTCTCCCTTACgCAcGCGtGTATAGCTCAGCTCAGATCCCGCAAGCCAT

 577 GGATATGATGATGAActGTCTCCCTTACgCGGCAtGTAGtAGCTCAGCTCAGATCCCGCAAGCCAT
 649 CTtGGACATGATCGCTGTGTCTCACTGGGGAGTCTAGCGGGCATAGCGTATTtCTCCATGtGGGAACTG

 649 CTtGGACATGATCGCTGTGTCTCACTGGGGAGTCTAGCGGGCATAGCGTATTtCTCCATGtGGGAACTG

 649 CTtGGACATGATCGCTGTGTCTCACTGGGGAGTCTAGCGGGCATAGCGTATTtCTCCATGtGGGAACTG
 721 GCGGAAGGTCCtGTgtGTGCTgtTGTCTgtTTTGCCGGCGTCCGAtCGCaACCTAtaCCACCGGGGgAaTtG

 721 GCGGAAGGTCCtGTGTGTGTGTGTGTATTGTCCGGCGTCCGAAACCCACgttCACCGGGGGAAGTtG

 721 GCGGAAGGTCCtGTGTGTGTGTGTATTGTCCGGCGTCCGAAACCCACgttACCGGGGGAAGTtG





793 tGcCaggaCCaGcgagGcgCTcaccagtttTtTcagccCAgGcGcCAAGcAgatATCCAGCTGATCAACAC
* * * * *
793 CGgCCaCActgtGtCTGgATtTgTAgcCTcTcgCAcCAGGcGcCAAGcAGaAgTCCAGCTGATCAACAC
* * * * *
793 CGcCCgCAgcaGcgCTGgATtTgTAgTCTcTcTcACaCCAGGcGcTAgGcAGaAcATCCAGCTGATCAACAC

865 CAACGGCAgTTGgCAcATCAATcGCAcGcGcCTGAACTGtAATGcgAgcCTcgACAcTgGCTGgTAgCgGg
* * * * *
865 CAACGGCAgTTGgCAcCTCAATAgCAcGcGcCTGAACtGCAATgAtAgcCTCAACACcGcGCTgGtAgCagG
* * * * *
865 CAACGGCAgTTGgCAcATCAATAgTAcGgCCTGAACtGCAATgAcAgcCTtAcCAcCgGcCTgGtAgCgGg

937 GCTcTTCTATtACCACAATtCAACTCTTCAGGCTGcCCcGAGAgGatygCCAGCTgtaggCCcCTTgCCGA
* * * * *
937 GCTTTCTATCAcCAcAAGTTCAACTCTTCAGGCTGtCCtGAGAGGcTAgCCAGCTGcCGAcCCcCTTACCGA
* * * * *
937 GCTTTCTATCAcCAtAAATtCAACTCTTCAGGCTGtCCcGAGAgGtTgGCCAGCTGcCGAcCCcCTcACCGA

1009 TTTGACCAGG
* * * * *
1009 TTTGACCAGG
* * * * *
1009 TTTGcCCAGG

FIG. 82C

FIG. 83

```

1 GFADIMGYIPLVGAPLGGAARALAHGVRVLEDGVNYATGNLPGCSFSIFLLALLSCLTPASAYOVRNSGCI
*****
1 GFADIMGYIPLVGAPLGGAARALAHGVRVLEDGVNYATGNLPGCSFSIFLLALLSCLTPASAYOVRNSTGL
*****
1 GFADIMGYIPLVGAPLGGAARALAHGVRVLEDGVNYATGNLPGCSFSIFLLALLSCLTPASAYOVRNSTGL
*****
73 YHVTNDCPNSSIVYEADTILHSPGCVPCVREGNASKCMVpvaPTVATRDGLPATQLRHIDLLVGSATLC
*****
73 YHVTNDCPNSSIVYEADAILHBPCCVPCVREGNASRCWVAMPTPTVATRDGKLPAQOLRRHIDLLVGSATLC
*****
73 YHVTNDCPNSSIVYEADAILHBPCCVPCVREDNVSRCWVAVPTVATKDGLPTQOLRRHIDLLVGSATLC
*****
145 SALYVGDLGCVFLVGQLETFSPRRHWTTOGCNCSIYPGHTGHRMAMDMMNWSPtAlVMAQILRIPQAI
*****
145 SALYVGDLGCVFLVGQLETFSPRRHWTTOGCNCSIYPGHTGHRMAMDMMNWSPtAlVMAQILRIPQAI
*****
145 SALYVGDLGCVFLVGQLETFSPRRHWTTOGCNCSIYPGHTGHRMAMDMMNWSPtAlVMAQILRIPQAI
*****
217 LDMIAGAHWGVLAGIAYFSMVGNWAKVLVLLLFAGVDATtYtTGGAaRTtqalTsfsPGAKQdIOLINT
*****
217 LDMIAGAHWGVLAGIAYFSMVGNWAKVLVLLLFAGVDaETHVTGGSaGhTVsgfVSLlAPGAKQNVOLINT
*****
217 LDMIAGAHWGVLAGIAYFSMVGNWAKVLVLLLFAGVDaETHVTGGSaArstagvaSLftPGaLQNIOLINT
*****
289 NGSWHINtTALNCNaSLdTGWvAGlFYhKFNSSGCPERMaSCRPLADFDQ
*****
289 NGSWHINStALNCNdSLtGWLaGLfYhHKFNSSGCPERLaSCRPLTDfDQ
*****
289 NGSWHINStALNCNdSLtGWLaGLfYhHKFNSSGCPERLaSCRPLTDfDQ
*****

```

1. human 27
2. HCV 1
3. human 23





FIG. 84

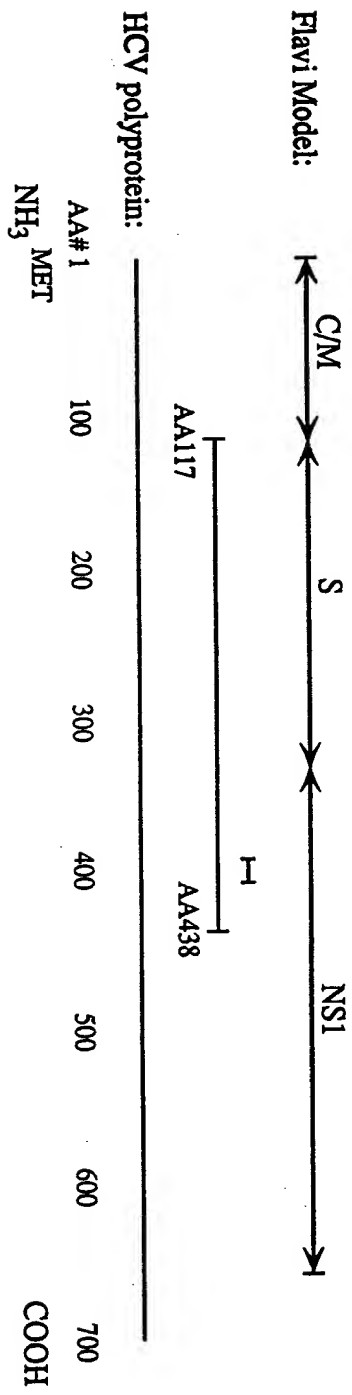


FIG. 85A

1. sSthorn#8.r (1-587)
2. sSEC1#2.r (1-587)
3. sSHCT18#7.r (1-587)
4. env1.hcv (1-1657)

1

GA
||
GA
||
GA

289 gggtggcgatggtcctctcctcccgctcgcctagctggccccacagacccccggtag

3 ATTGCGCAATTGGGTAAGGTCATCGATACCCCTTACGTCGCGCTTCGCCGACCTCATGGGGTACATACCGCTC
3 ATTGCGCAATTGGGTAAGGTCATCGATACCCCTTACGTCGCGCTTCGCCGACCTCATGGGGTACATACCGCTC
3 ATTGCGCAATTGGGTAAGGTCATCGATACCCCTTACGTCGCGCTTCGCCGACCTCATGGGGTACATACCGCTC
361 tcgCGCAATTGGGTAAGGTCATCGATACCCCTTACGTCGCGCTTCGCCGACCTCATGGGGTACATACCGCTC

75 GTCGGCGCCCTCTTGGGGGGCGCTGCCAGGGCCCTGGCGCATGGCGTCCGGTCTGGAAGACGGCGTGAAC
75 GTCGGCGCCCTCTTGGAGGCGCTGCCAGGGCCCTGGCGCATGGCGTCCGGTCTGGAAGACGGCGTGAAC
75 GTCGGCGCCCTCTTGGAGGCGCTGCCAGGGCCCTGGCGCATGGCGTCCGGTCTGGAAGACGGCGTGAAC
433 GTCGGCGCCCTCTTGGAGGCGCTGCCAGGGCCCTGGCGCATGGCGTCCGGTCTGGAAGACGGCGTGAAC



FIG. 85B

147 TATGCAACAGGGAACCTTCCCTGCTTGCCTCTTCTcTcTCTTCCCTTCTGCCCcTGCTCTCTTgctTGACcGTG
147 TATGCAACAGGGAACCTTCCCTGCTTGCCTCTTCTcTcTATCTTCCCTTCTGCCCcTGCTCTCTTgctTGACtGTG
147 TATGC CAGGGAACCTTCCCTGCTTGCCTCTTCTcTcTATCTTCCCTTCTGCCCcTGCTCTCTTgCcTGACTGTG
505 TATGCAACAGGGAACCTTCCCTGCTTGCCTCTTCTcTcTATCTTCCCTTCTGCCCcTGCTCTCTTgCcTGACTGTG
219 CCCGCTTCAGCCTACCCAAGTGCcCAACTCCaCGGGCTTTACCAATGTcACCAAGATTGCCcCAACTCGAGt
219 CCCGCTTCAGCCTACCCAAGTGCcCAACTCCcCGGGCTTTACCAATGTcACCAATGATTGCCcTAActCGAGc
219 CCCGCTTCAGCCcACCCAAGTGCcCAACTCCACGGGGCTTTACCAATGTcACCAATGATTGCCcCAACTCGAGT
577 CCCGCTTcgCCcTACCcAAGTGCcCAACTCCACGGGGCTTTACCAAGTcACCAATGATTGCCcTAActCGAGT
291 ATTGTGTACGAGCGCGCCGATGcTATCTTCACAGcCTCCGGGGTGTCTCCCTTGcGCTTcgCGAGGgTAAcGcc
291 ATTGTGTACGAGCGCGCCGATGCCATCTTCACACACTCCGGGGTGTCTCCCTTGcGCTTcACGAGGcCAAcGTC
291 ATTGTaTACGAAGCGCGCGcCATCTTCACACACTCCGGGGTGTCTCCCTTGcGCTTcACGAGGcCAAcGTC
649 ATTGTgTACGAGCGCGCCGATGCCATCTTCACACACTCCGGGGTGCcGCTTGCCTTgTgAGGGcCAAcGcc
363 TCGAGGTGTGGGTGGCGATGACCCcCACGGGTGGCCACcAGGGcgCGCAAACTCCcCACACcGcAGCTTGCgA
363 TCGAGGTGTGGGTGGCGATGACCCcCACGGGTGGCCACcAGGGcgCGCAAACTCCcCACACcGcAGCTTGCgA
363 TCGAGGTGTGGGTGGCGgTGAACCCcCACGGGTGGCCACcAGGGATGGCAAACTCCcCACACcGcAGCTTGCgA
721 TCGAGGTGTGGGTGGCGgATGACCCcTACGGGTGGCCACcAGGGATGGCAAACTCCcCGcgAGCGcAGCTTGCgA



435 CGTCACATCGATCTGCTTGTGCGGAGCCGACCCTCTGCTCGGCCCTCTACGTGGGGGACCCTGTGCGGCTC
435 CGTCACATCGATCTGCTTGTGCGGAGCCGCTACCCTCTGCTCGGCCCTCTACGTGGGGGACCCTGTGCGGCTC
435 CGTCACATCGATCTGCTTGTGCGGAGCCGACCCTCTGCTCGGCCCTCTATGTGGGGGACCCTGTGCGGCTC
793 CGTCACATCGATCTGCTTGTGCGGAGCCGACCCTCTGCTCGGCCCTCTACGTGGGGGACCCTATGCGGCTC

507 ATCTTtCTTGTGCGGTCACTGTTcACCTTCTCTCCAGGCGCCACTGGAACGCAAGGTTGCAATTGCTCT
507 GTCTTcCTTGTGCGGTCACTGTTTACCCTTCTCTCCAGGCGCCACTGGAACGCAAGGTTGCAATTGCTCT
507 GTCTTCTTGTGCGGCCAAGTTTACCCTTCTCTCCAGGCGCCACTGGAACGCAAGGTTGCAATTGCTCT
865 GTCTTCTTGTGCGGCCAAGTTTACCCTTCTCTCCAGGCGCCACTGGAACGCAAGGTTGCAATTGCTCT

579 ATCGAATTG
579 ATCGAATTG
579 ATCGAATTG
579 ATCGAATTG
937 ATCTatccc

FIG. 85C



```

              10          20          30          40
      GAATTCGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCGGCCATAT
X::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
/SSp CTCTCCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCGGCCATAT
           550           560           570           580           590           600

50         60         70         80 A        90         100
AACAGGTCACCGCATGGCATGGGATATGATGATGAAGTGGTCCCCCTACGACGGCGTTAGT
::: ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
AACGGGTACCGCATGGCATGGGATATGATGATGAAGTGGTCCCCCTACGACGGCGTTGGT
           610           620           630           640           650           660

110        120        130        140        150        160
GGTAGCTCAGCTGCTCCGGATCCCACAAGCCATCTTGACATGATCGCTGGTGCTCACTG
: ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
AATGGCTCAGCTGCTCCGGATCCCACAAGCCATCTTGACATGATCGCTGGTGCTCACTG
           670           680           690           700           710           720

170        180        190        200        210        220
GGGAGTCCTGGCGGGCATAGCGTATTTCTCCATGGTGGGGAACTGGGCGAAGGTCCTTGGC
:::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
GGGAGTCCTGGCGGGCATAGCGTATTTCTCCATGGTGGGGAACTGGGCGAAGGTCCTGGT
           730           740           750           760           770           780

230        240        250        260        270        280
AGTGCTGCTGCTATTTGCCGGCGTCGACGCGGAAACCCACGTCACTGGGGGGATCGCCGC
:::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::
AGTGCTGCTGCTATTTGCCGGCGTCGACGCGGAAACCCACGTCAACGGGGGAAGTGC CGG
           790           800           810           820           830           840

290        300        310        320        330        340
CAAACACTACGGCTAGCCTTACTGGTCTCTTCAATTTAGGTGCCAAGCAGAATCCAGCT
: : :: : : : : : : : : : : : : : : : : : : : : : : : : : : : :
CCACACTGTGTCTGGATTGTGTAGCCTCCTCGCACCGGCCAAGCAGAACGTCCAGCT
           850           860           870           880           890           900

350        360        370        380        390        400
GATCAACACCAACGGCAGTTGGCACATCAACAGGACGGCCTTGAAGTGAATGATAGCCT
::::::::::::::::::::::::::::::::::::: ::::: : : ::::: : ::::: :
GATCAACACCAACGGCAGTTGGCACCTCAATAGCACGGCCCTGAAGTGAATGATAGCCT
           910           920           930           940           950           960

410        420
CAACACCGGCTGGAATTC
::::::::::::X
CAACACCGGCTGGTTGGCAGGGCTTTTCTATCACCACAAGTTCAACTCTTCAGGCTGTCC
           970           980           990          1000          1010          1020

```

FIG. 86



AA #117-308 (putative envelope region)

FIG. 87

- | | |
|-----------------------|--------------------|
| 1) HCT #18 (USA) | 3 clones sequenced |
| 2) JH23 (USA) | ? |
| 3) JH 27 (USA) | ? |
| 4) PBL-Th (USA) | 2 clones sequenced |
| 5) EC1 (Italy) | 3 clones sequenced |
| 6) HCV-1 (chimpanzee) | multiple |

C/M \longleftrightarrow S

1) (P)

2)

3)

4)

5)

6) RNLGKVIDTLTCGFADLMGYIPLVGAPLGGAARALAHGVRVLEDGVNYATGNL

1) H

2)

3) S T T

4) L

5) (F) S

6) PGCSFSIFLLALLSCLTVPASAYQVRNSTGLYHVTNDCPNSSIVYEADAILH

1) Y (H) V V T

2) A D V V K T

3) S PVA N

4) A A R T

5) H V T

6) TPGCVPCVREGNASRCWVAMTPTVATRDGKLPATQLRRHIDLLVGSATLCS

1)

2) I D

3) D

4)

5) I

6) ALYVGDL CGSVFLVGQLFTFSPRRHWTTQGCNCSI

SUMMARY: "S" AA117-308 (93%)

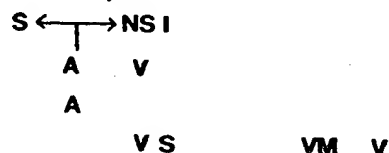
HCT#18, PBL-Th, EC1(Italy) have 97% homology with HCV-1

JH23 and JH 27 have 96% and 95% homology with HCV-1, respectively



AA#300-438 (C-terminal region of the putative envelope region and amino ~1/3 of NSI)

- | | |
|-----------------------------------|--|
| 1) JH23 | ? |
| 2) JH27 | ? |
| 3) Japanese isolate (T. Miyamura) | ? |
| 4) EC10 (Italy) | 2 clones sequenced
(one nt difference, which did not
result in an amino acid change)
multiple |
| 5) HCV-1 (chimpanzee) | |



- 1) D
2) D
3)
4)
5) TTQGCNCSIYPGHITGHRMAWDMMMWNWSPPTALVMAQLLRIPQAILDMIAGA

- | | | | | |
|----|-----|-----|------|--------------|
| 1) | M | | R | ARSTA VA |
| 2) | | | T YT | N AR TQALT F |
| 3) | L Y | I M | GH R | VQ VT TLT |
| 4) | | A | | I AK TASLTA |
- 5) HWGVLAGIAYFSMVGNWAKVLVLLLFAGVDAETHVTGGSAGHTVSGFVSL

- | | | | | | |
|-------|--------|---|-----|---|---|
| 1)FS | R | I | I | T | V |
| 2)FT | DI | | I R | A | D |
| 3)FR | S KI V | | I R | Q | F |
| 4)FNL | I | | I R | | N |
- 5) LAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWL

SUMMARY: NS 1 AA 330-660

"Isolate"	ZHomology (AA330-438)	ZHomology (AA383-405)
JH23	83	57
JH27	80	39
Japanese	73	48
EC10 (Italy)	84	48

FIG. 88



FIG. 89A

5' terminus-----
CACTCCACCATGAATCACTCCCCTGTGAGGAAGTACTGTCTTCACGCAGAAAGCGTCTAG
CCATGGCGTTAGTATGAGTGTCTGTCAGCCTCCAGGACCCCCCTCCCGGGAGAGCCATA
GTGGTCTGCGGAACCGGTGAGTACACCGGAATTGCCAGGACGACCGGGTCTTTCTTGGA
TCAACCCGCTCAATGCCTGGAGATTTGGGCGTGCCCCGCAAGACTGCTAGCCGAGTAGT
GTTGGGTGCGGAAAGGCCCTTGTTGGTACTGCCTGATAGGGTGCTTGCGAGTGCCCCGGGAG-300

(Putative initiator methionine codon)

GTCTCGTAGACCGTGCACCATGAGCAGCAATCCTAAACCTCAAAAAAACAACGTAAG
CACCACCGTGCACAGGACGTCAAGTTCCCGGGTGGCGGTGAGATCGTTGGTGGAGT
TTACTTGTGGCGCGAGGGGCCCTAGATTGGGTGTGCGCGGACGAGAAAGACTTCCGA
GCGGTGCGAACCTCGAGGTAGACGTGAGCCTATCCCCAAGGCTCGTCCGCCGAGGGCAG
GACCTGGGCTCAGCCCGGGTACCCTTGGCCCTCTATGGCAATGAGGGCTGCGGGTGGGC-600
GGGATGGCTCTGTCTCCCGTGCTCTCGGCTAGCTGGGGCCCAAGACCCCGGGC
TAGGTGCGCAATTTGGGTAAAGGTATCGATACCTTACGTGCGGCTTCGCCGACCTCAT
GGGGTACATACCGCTCGTCCGCCGCCCTCTTGGAGGCGTGCAGGGCCCTGGCGCATGG
CGTCCGGGTTCTGGAAGACGGCGTGAATATGCAACAGGGAACCTTCTGTTGCTCTT

CTCTATCTTCTTCTGGCCCTGCTCTTGTGCTTGAAGTGTGCGCGCTTCGGCTACCAAGT-900
GCGCAACTCCACGGGGCTTTACCACGTACCAATGATTGCCCTAACTCGAGTATTGTGA
CGAGGCGGGCGATGCCATCTGCACACTCCGGGGTGCCTCCCTTGCCTTGTGAGGGCAA
CGCTCGAGGTGTTGGGTGGCGATGACCCCTACGGTGGCCACCAGGGATGGCAAACCTCC
CGGACGCGAGCTTCGACGTACATCGATCTGCTTGTGCGGAGCGCCACCCTCTGTTGCGG
CCTCTACGTGGGGGACCTATGCGGGTCTGTCTTTCTTGTGCGGCAACTGTTACCTTCTC-1200
TCCAGGCGCCACTGGACGACGCAAGGTTGCAATTGCTCTATCTATCCCGGCCATATAAC

GGGTACCGCATGGCATGGGATATGATGATGAAGTGGTCCCCTACGACGGCGTTGGTAAG
GGCTCAGCTGCTCCGGATCCCAAGCCATCTTGGACATGATCGCTGGTGTCTACTGGGG
AGTCTGGCGGGCATAGCGTATTTCTCCATGGTGGGGAAGTGGGCGAAGGTCCTGGTAGT
GCTGTGCTATTTGCCGGCGTGCAGCGGGAACCCACGTACCGGGGGAAGTGCCGGCCA-1500
CACTGTGCTGGATTTGTTAGCCTCTCGCACAAGCGGCGCAAGCAGAACGTCAGCTGAT
CAACACCAACGGCAGTTGGCACCTCAATAGCAGGCGCTGAAGTGAATGATAGCTCAA
CACCGGCTGGTTGGCAGGGCTTTTCTATCACCACAAGTTCAACTCTTCAGGCTGTCTGA
GAGGCTAGCCAGCTGCCGACCCCTTACCATTGTTGACGAGGGCTGGGGCCCTATCAGTTA
TGCCAACGGAAGCGGCCCGACCAAGCGCCCTACTGCTGGCACTACCCCCAAACCTTG-1800
CGGATTGTGCCCCGGAAGAGTGTGTGTTGGTCCGGTATATTGCTTCACTCCGAGCCCGT
GGTGGTGGGAACGACCGACAGGTGCGGCGCGCCACCTACAGCTGGGGTGAAATGATAC
GGACGTCTTCTGCTTAACAATACCAGGCCACCGCTGGGCAATTGGTTGCGTTGTACCTG
GATGAAGTCAACTGGATTACCAAAGTGTGCGGAGCGCCTCTTGTGTCATCGGAGGGGC
GGGCAACAACACCCTGCACTGCCCCACTGATTGCTTCCGCAAGCATCCGGACGCCACATA-2100

CTCTCGGTGCGGCTCCGGTCCCTGGATCACACCCAGGTGCCTGGTGGTCACTACCCGTATAG
GCTTTGGCATTATCCTTGTACCATCAACTACACCATATTTAAAATCAGGATGTACGTGGG
AGGGGTCGAACACAGGCTGGAAGCTGCCTGCAACTGGACGCGGGGCGAACGTTGCGATCT
GGAAGACAGGGACAGGTCCGAGCTCAGCCGTTACTGTGACCACTACACAGTGGCAGGT
CCTCCCGTGTCTTCAACAACCTACCAAGCTTGTCCACCGGCTCATCCACCTCCACCA-2400
GAACATTGTGGACGTGCACTTGTACGGGGTGGGGTCAAGCATCGCGTCTTGGGCCAT
TAAGTGGGAGTACGTGCTTCTCTGTTCTTCTGCTTGCAGACGCGCGCTGCTCTCTG
CTTGTGGATGATGCTACTCATATCCCAAGCGGAGGCGGCTTTGGAGAACCTCGTAATAT
AATGACAGCATCCCTGGCCGGGACGACGGTCTTGTATCCTTCTCTGTTCTTGTGCTT
TGCATGGTATTTGAAGGGTAAGTGGGTGCGGAGCGGTCTACACCTTCTACGGGATGTG-2700
GCCTCTCTCTCTGCTCTGTTGGCGTTGCCCGAGCGGGCTACGCGCTGGACACGGAGGT
GGCCGCGTCTGTGTCGGGTGTTGTTCTCGTGGGTGATGGCGCTGACTCTGTACCATTA
TTACAAGCGCTATATCAGCTGGTGTGTTGGTGGCTTCAAGTATTTCTGACCAAGAGTGA
AGCGCAACTGCAGGTGTGATTCCCCCCTCAAGCTCCGAGGGGGGCGGACGCGCTCAT



FIG. 89B

CTTACTCATGTGTGCTGTACACCCGACTCTGGTATTGACATACCAAATTGCTGCTGGC-3000
CGTCTTCGGACCCCTTTGGATTCTTCAAGCCAGTTTGTCTAAAGTACCCTACTTTGTGCG
CGTCCAAGGCCCTTCTCCGGTTCTGCGGTTAGCGCGGAAGATGATCGGAGGCCATTACGT
GCAAAATGGTCATCATTAAAGTTAGGGGCGCTTACTGGCACCTATGTTTATAACCATCTCAC
TCCTCTTCGGGACTGGGCGCACAAACGGCTTGCAGATCTGGCCGTGGCTGTAGAGCCAGT
CGTCTTCTCCAAATGGAGACCAAGCTCATCACGTGGGGGGCAGATACCGCCGCGTGC6G-3300
TGACATCATCAACGGCTTGCCTGTTTCCGCCCGCAGGGGGCCGGGAGATACTGCTCGGGCC
AGCCGATGGAATGGTCTCAAGGGGTGGAGTTGCTGGCGCCCATCACGGCGTACGCCCA
GCAGACAAGGGGCTCTAGGGTGCATAATCACCAGCCTAACTGGCCGGGACAAAAACCA
AGTGGAGGGTGAAGGTCCAGATTGTGTCAACTGCTGCCCAAACCTTCTGGCAACGTGCAT
CAATGGGGTGTGCTGGAAGTGTCTACCACGGGGCCGGAACGAGGACCATCGCGTCAACCAA-3600

GGGTCTGTATCCAGATGTATACCAATGTAGACCAAGACCTTGTGGGCTGGCCCGCTCC^T

^C
GCAAGGTAGCCGCTCATTGACACCCTGCACTTGGGGCTCCTCGGACCTTTACCTGGTCAC
GAGGCACGCCGATGTCTTCCGTCGCCGGCGGGGTGATAGCAGGGGCGCCTGCTGTC
GCCCGGGCCATTTCTACTTGAAGGCTCCTCGGGGGGTCCGCTGTTGTGCCCGCGGG
GCACGCCGTGGGCATATTTAGGGCGCGGTGTGCACCCGTGGAGTGGCTAAGGCGGTGGA-3900
CTTTATCCCTGTGGAGAACCCTAGAGACAACCATGAGGTCCCCGGTGTTCACGGATAACTC
CTCTCCACCAAGTAGTGCCCGAGAGCTTCCAGGTGGCTCACCTCCATGCTCCACAGAGCAG
CGGCAAAAGCACCAAGGTCCCGGCTGCATATGCAGCTCAGGGCTATAAGGTGCTAGTACT
CAACCCCTCTGTTGCTGCAACACTGGGCTTTGGTGTCTTACATGTCCAAGGCTCATGGGAT

^T
CGATCCTAACATCAGGACCGGGGTGAGAACAATTACCACTGGCAGCCCCATCACGTACTC-4200
CACCTACGGCAAGTTCTTGCCGACGGCGGGGTGCTCGGGGGGCGCTTATGACATAATAAT
TTGTGACGAGTGCCACTCCACGGATGCCACATCCATCTTGGGCATCGGCACTGTCTTTGA
CCAAGCAGAGACTGCGGGGGCGAGACTGGTTGTGCTCGCCACCGCCACCCCTCCGGGCTC
CGTCACTGTGCCCATCCCAACATCGAGGAGTTGCTCTGTCCACCACCGGAGAGATCCC
TTTTTACGGCAAGGCTATCCCCCTCGAAGTAATCAAGGGGGGGAGACATCTCATCTTCTG-4500
TCATTCAAAGAAGAAGTGCGACGAACTCGCCGCAAAGCTGGTCGATTGGGCATCAATGC
CGTGGCCTACTACCGCGGTCTTGACGTGTCCGTATCCCGACCAGCGGCGATGTTGTCTG

^A
CGTGGCAACCGATGCCCTCATGACCGGCTATACGGGCGACTTCGACTCGGTGATAGACTG
CAATACGTGTGTACCCAGACAGTCGATTTAGCCTTGACCCTACCTTCACCATTGAGAC
AATCACGCTCCCCAGGATGCTGTCTCCGCACTCAACGTGCGGGCAGGACTGGCAGGGG-4800
GAAGCCAGGCTCTACAGATTTGTGGCACCAGGGGAGCGCCCTCCGGCATGTTGCACT
GTCCGTCTCTGTGAGTGCTATGACGCAAGGCTGTGCTTGGTATGAGCTCACGCCCGCGGA
GACTACAGTTAGGCTACGAGCGTACATGAACACCCCGGGGCTTCCGCTGTGCCAGGACCA
TCTTGAAATTTGGGAGGGCGTCTTTACAGGCCTCACTCATATAGATGCCCACTTTCTATC
CCAGACAAAGCAGAGTGGGGAGAACCCTTCTTACCTGGTAGCGTACCAAGCCACCGTGTG-5100
CGCTAGGGCTCAAGCCCCTCCCCATCGTGGGACCAGATGTGGAAGTGTGTTGATTGCGCT
CAAGCCCACCCCTCCATGGGCCAACACCCCTGCTATACAGACTGGGCGCTGTTGAGAATGA
AATCACCCCTGACGCACCCAGTCACCAAATACATCATGACATGCATGTGCGCCGACCTGGA
GGTCGTACAGACCTGGGTGCTCGTTGGCGGCTCCTGGCTGCTTTGGCCGCGTATTG
CCTGTCAACAGGCTGCGTGGTCTAGTGGGCAGGGTCTGTTGTCCGGGAAGCCGGCAAT-5400
CATACCTGACAGGGAAGTCTCTACCGAGAGTTGATGAGATGGAAGAGTGTCTCAGCA
CTTACCGTACATCGAGCAAGGGATGATGCTCGCCGAGCAGTTCAAGCAGAAGGCCCTCGG
CCTCCTGCAGACCGCGTCCCGTCAGGCAGAGGTTATCGCCCTGCTGTCCAGACCAACTG
GCAAAAACCTCGAGACCTTCTGGGCGAAGCATATGTGGAACCTTCATCAGTGGGATACAATA
CTTGGCGGGCTTGTCAACGCTGCCTGGTAACCCCGCCATTGCTTCATTGATGGCTTTTAC-5700
AGCTGCTGTACCAAGCCCACTAACCCTAGCCAAACCTCCTCTTCAACATATTGGGGGG
GTGGGTGGCTGCCAGCTCGCCGCCCCGGTGGCGTACTGCTTTGTGGGCGCTGGCTT
AGCTGGCGCCGCGCATCGGCACTGTTGGACTGGGGAAGGTCTCATAGACATCCTTGCAGG
GTATGGCGCGGGCGTGGCGGGAGCTCTTGTGGCATTCAAGATCATGAGCGGTGAGGTCCC
CTCCACGGAGGACCTGGTCAATCTACTGCCCGCCATCCTCTCGCCCGGAGCCCTCGTAGT-6000
CGGCGTGGTCTGTGAGCAATACTGCGCCGCGACGTTGGCCGGGCGAGGGGGGAGTGCA
GTGGATGAACCGGCTGATAGCCTTCGCTCCCGGGGAACCATGTTTCCCCACGCACTA
CGTGCCGGAGAGCGATGCAGCTGCCCGCGTCACTGCCATACTCAGCAGCCTCACTGTAAC
CCAGCTCCTGAGGCGACTGCACCAAGTGGATAAGCTCGGAGTGTACCACTCCATGCTCCGG



FIG. 89C

TTCTGGCTAAGGGACATCTGGGACTGGATATGCGAGGTGTTGAGCGACTTTAAGACCTG-6300
GCTAAAAGCTAAGCTCATGCCACAGCTGCCTGGGATCCCCTTTGTGTCCTGCCAGCGCGG
GTATAAGGGGGTCTGGCGAGTGGACGGCATCATGCACACTCGCTGCCACTGTGGAGCTGA
GATCACTGGACATGTCAAAAACGGGACGATGAGGATCGTCGGTCCTAGGACCTGCAGGAA
CATGTGGAGTGGGACCTTCCCCATTAATGCCTACACCACGGGCCCCCTGTACCCCCCTTCC
TGCGCCGAACACACGTTTCGCGCTATGGAGGGTGTCTGCAGAGGAATATGTGGAGATAAG-6600
GCAGGTGGGGGACTTCCACTACGTGACGGGTATGACTACTGACAATCTCAAATGCCCGTG
CCAGGTCCCATCGCCCGAATTTTTACAGAATTGGACGGGGTGCCTACATAGGTTTGC
GCCCCCTGCAAGCCCTTGCTGCGGGAGGAGGTATCATTAGAGTAGGACTCCACGAATA
CCCGGTAGGGTCGCAATTACCTTGCAGGCCCGAACCGGACGTGGCCGTGTTGACGTCCAT
GCTCACTGATCCCTCCCATATAACAGCAGAGGCGGCGGGCGAAGGTTGGCGAGGGGATC-6900
ACCCCCCTGTGTGGCAGCTCCTCGGCTAGCCAGCTATCCGCTCCATCTCTCAAGGCAAC
TTGCACCGCTAACCATGACTCCCCTGATGCTGAGCTCATAGAGGCCAACCTCCTATGGAG
GCAGGAGATGGGCGGCAACATCACCAGGGTTGAGTCAGAAAACAAAGTGGTGATTCTGGA
CTCCTTCGATCCGCTTGTGGCGGAGGAGGACGAGCGGGAGATCTCCGTACCCGCGAGAAAT
CCTGCGGAAGTCTCGGAGATTGCGCCAGGCCCTGCCGTTTGGGCGCGGCGGACTATAA-7200
CCCCCGCTAGTGGAGACGTGGAAAAAGCCGACTACGAACCACCTGTGGTCCATGGCTG
TCCGCTTCCACCTCCAAAGTCCCCTCCTGTGCCTCCGCTCGGAAGAAGCGGACGGTGGT
CCTCACTGAATCAACCCTATCTACTGCCTTGGCCGAGCTCGCCACCAGAAAGCTTTGGCAG
CTCCTCAACTTCCGGCATTACGGGCGACAATACGACAACATCCTCTGAGCCCCGCCCTTC
TGGCTGCCCCCCGACTCCGACGCTGAGTCTATTCTCCATGCCCCCTGGAGGGGGGA-7500
GCCTGGGATCCGGATCTTAGCGACGGGTATGGTCAACGGTCAGTAGTGAGGCCAACGC
GGAGGATGTCGTGTGCTGCTCAATGTCTTACTCTTGGACAGGCGCACTCGTCACCCCGTG
CGCCGCGGAAGAACAGAAACTGCCCATCAATGCACTAAGCAACTCGTTGCTACGTACCA
CAATTGGTGTATTCCACCACCTCACGCAGTGCTTGCCAAAGGCAGAAAGAAAGTCACATT
TGACAGACTGCAAGTTCTGGACAGCCATTACAGGACGTACTCAAGGAGGTTAAAGCAGC-7800
GGCGTCAAAAAGTGAAGGCTAAGTTGCTATCCGTAGAGGAAGCTTGACGCTGACGCCCC
ACACTCAGCCAAATCCAAGTTTGGTTATGGGGCAAAGACGTCCGTTGCCATGCCAGAAA
GGCCGTAAACCACATCAACTCCGTGTGGAAGACCTTCTGGAAGACAATGTAACACCAAT
AGACACTACCATCATGGCTAAGAACGAGGTTTTCTGCGTTACGCTGAGAAGGGGGGTGCG
TAAGCCAGCTCGTCTCATCGTGTTCGCCGATCGGGCGTGCCTGTGCGAAAAGATGGC-8100
TTTGTACGCTGGTTTACAAAGTCCCCCTTGGCGGTGATGGGAAGCTCCTACGGATTCCA
ATACTCACCAGGACAGCGGGTTGAATTCCTCGTGCAAGCGTGGAAGTCCAAGAAAACCCC
AATGGGGTTCTCGTATGATACCCGCTGCTTTGACTCCACAGTCACTGAGAGCGACATCCG
TACGGAGGAGGCAATCTACCAATGTTGTGACCTCGACCCCCAAGCCCGCTGGCCATCAA
GTCCCTCACCAGAGGCTTTATGTTGGGGGCCCTTTACCAATTCAAGGGGGGAGAAGTGC-8400
CGGCTATCGCAGGTGCCGCGGAGCGGCTACTGACAACCTAGCTGTGGTAACACCCCTCAC
TTGCTACATCAAGGCCCGGGCAGCCTGTGAGCCGCGAGGGCTCCAGGACTGCACCATGCT
CGTGTGTGGCGACGACTTAGTCGTTATCTGTGAAAGCGCGGGGGTCCAGGAGGACGCGGC
GAGCCTGAGAGCCTTCACGGAGGCTATGACCAGGTACTCCGCCCCCCCTGGGGACCCCCC
ACAACCAGAAATACGACTTGGAGCTCATAACATCATGCTCCTCAACGTGTGAGTGCCTCA-8700
CGACGGCGCTGGAAAGAGGGGTCTACTACCTCACCCTGACCTACAACCCCCCTCGCGAG
AGCTGCGTGGGAGACAGCAAGACACACTCCAGTCAATTCCTGGCTAGGCAACATAATCAT
GTTTGGCCCCACACTGTGGGCGAGGATGATACTGATGACCCATTTCTTTAGCGTCTTTAT
AGCCAGGGACGCTTGAACAGGCCCTCGATTGCGAGATCTACGGGGCCTGCTACTCCAT
AGAACCCTGGATCTACCTCCAATCATTCAAAGACTCCATGGCCTCAGCGCATTTTCACT-9000
CCACAGTACTCTCAGGTGAATTAATAGGGTGGCCGCATGCCTCAGAAAACCTTGGGGT

G
ACCGCCCTTGCAGCTTGGAGACACCGGGCCCGAGCGTCCGCGCTAGGCTTCTGGCCAG
AGGAGGCAGGGCTGCCATATGTGGCAAGTACCTTTCAACTGGGCGAGTAAGAACAAAGCT
CAAACCTCACTCCAATAGCGGCCGCTGGCCAGCTGGACTTGTCCGGCTGGTTACGGCTGG
CTACAGCGGGGAGACATTTATCACAGCGTGTCTCATGCCCGGCCCGCTGGATCTGGTT-9300
TTGCCTACTCCTGCTTGTGCAAGGGGTAGGCATCTACCTCCTCCCAACCGATGAAGGTT
GGGGTAAACACTCCGGCT-----3' terminus

Some clonal heterogeneities producing amino acid
substitutions are shown. There are many other
"silent mutations (not shown).



FIG. 90A

R T
MSTNPKPQKKNRNTNRRPQDVKFPGGGQIVGGVYLLPRRGPRLGVRATR
KTSERSQPRGRRQPIPKARRPEGRTWAQPGYPWPLYGNEGCGWAGWLLSP-100
RGRPSWGPTDPRRRSRNLGKVIDTLTCGFADLMGYIPLVGAPLGGAARA

T
LAHGVRVLEDGVNYATGNLPGCSFSIFLLALLSCLTVPASAYQVRNSTGL-200
YHVTNDCPNSSIVYEAADAILHTPGCVPCVREGNASRCWVAMTPTVATRD
GKLPATQLRRHIDLLVGSATLCSALYVGDLGGSVFLVGQLFTFSPRRHWT-300

V
TQGCNCSIYPGHITGHRMAWDMMMNWSPTTALVMAQLLRIPQAILDMIAG
AHWGVLAGIAYFSMVGWAKVLVLLLFAGVDAETHVTGGSAGHTVSGFV-400
SLLAPGAKQNVQLINTNGSWHLNSTALNCNDSLNTGWLGLFYHHKFNS
GCPERLASCRPLTDFDQGWGPISYANGSGPDQRPYCWHYPPKPCGIVPAK-500
SVCGPVYCFTSPVVGTTDRSGAPTYSWENDTDVFLNNTRPPLGNWF
GCTWMNSTGFTKVCGAPPCVIGGAGNNTLHCPTDCFRKHPDATYSRCGSG-600

I
PWLTPRCLVDYPYRLWHYPCTINYTIFKIRMYVGGVEHRLEAACNWTGRG
RCDLEDNRDRSELSPLLLTTTQWQVLPSCFTTLPALSTGLIHLHQNIVDVQ-700
YLYGVGSSIASWAIKWEYVLLFLLADARVCSCLMMLLSQAEAALEN
LVILNAASLAGTHGLVSFLVFFCFAWYLKKGWVPGAVYTFYGMWPLLLLL-800

(N)
LALPQRAYALDTEVAASCGGVVLVGLMALTSPYYKRYISWCLWWLQYFL
TRVEAQLHVWIPPLNVRGGRDAVILLMCAVHPTLVFDITKLLAVFGPLW-900
ILQASLLKVPYFVRVQGLLRFCALARKMIGGHYVQMVIIKLGALTGTYY
NHLTPLRDWAHNGRLDLAVAVEPVVFSQMETKLITWGADTAACGDIINGL-1000
PVSARRGREILLGPADGMVSKGWRLAPITAYAQQTRGLLGCIIITSLTGR
DKNQVEGEVQIVSTAAQTFLATCINGVCWTVYHGAGTRTIASPKGPVIQM-1100

S T
YTNVDQDLVGWPAPOGSRSLTPCTCGSSDLYLVTRHADVIPVRRRGDSRG
SLLSPRPISYLGSSGGPLLCPAGHAVGIFRAAVCTRGVAKAVDFIPVEN-1200
LETTMRSPVFTDNSSPPVVPQSFQVAHLHAPTGSGBKSTKVPAAYAAQGYK

L
VLVLNPSVAATLGFGAYMSKAHGIDPNIRTGVRTITTGSPITYSTYGKFL-1300
ADGGCSGGAYDIIICDECHSTDATSILGIGTVLDQAETAGARLVVLATAT
PPGSVTVPHPNIEEVALSTTGEIPFYGKAIPLEVIKGRHLIFCHSKKKC-1400
DELAACLVALGINAVAYYRGLDVSVIPTSGDVVVVATDALMTGYTGDFDS

Y (S)
VIDCNTCVTQTVDFSLDPTFTIETITLPQDAVSRTQRRGRTGRGKPGIYR-1500
FVAPGERPSGMFDSSVLCECYDAGCAWYELTPAETTVRLRAYMNTPLPV
CQDHLEFWEQVFTGLTHIDAHFLSQTQSGENLPYLWAYQATVCARAQAP-1600
PPSWDQMWKCLIRLKPTLHGPTPLLYRLGAVQNEITLTHPVTKYIMTCS
ADLEVVTSTWVLVGGVLAALAAAYCLSTGCVVIVGRVVLGKPAIIPDREV-1700
LYREFDEMEECQHLPIEQGMMLAEQFKQKALGLLQASRQAEVIAPAV
QTNWQKLETFWAKHMWNFISGIQYLAGLSTLPGNPAIASLMAFTAATVSP-1800
LTTSTLLFNILGGWVAAQLAAPGAATAFVGAGLAGAAIGSVGLGKVLID



FIG. 90B

(G)
ILAGYGAGVAGALVAFKIMSGEVPSTEDLVNLLPAILSPGALVVGVVCAA-1900

(HC)
ILRRHVGPGEAVQWMNRLIAFASRGNHVSPTHYVPESDAAARVTAIILSS
LTVTQLLRRLHQWISSECTTPCSGSWLRDIWDWICEVLSDFKTWLKAKLM-2000

(V)
PQLPGIPFVSCQRGYKGVWRGDGIMHTRCHCGAEITGHVKNGTMRIVGPR
TCRNMWSGTFPINAYTTGPCTPLPAPNYTFALWRVSAEEYVEIRQVGDFH-2100
YVTGMTTDNLKPCQVPSPEFFTELDGVRHLRFAPPCKPLREEVSFRVG
LHEYVGSQLPCEPEPDVAVLTSMLTDP SHITAEAGRRRLARGSPPSVAS-2200
SSASQLSAPSLKATCTANHDSFDAELIEANLLWRQEMGGNITRVESENKV
VILDSFDPLVAEEDEREISVPAEILRKSRRFAQALPVWARPDYNPPLVET-2300

(S)
WKKPDYEPPVHGCPLPPPKSPPVPPPRKRTTVLTESTLSTALAEATR

(FA)
SFGSSSTSGITGDNTTTSSEPAPSGCPPDSDAESYSSMPLEGEPPGDPDL-2400
SDGSWSTVSSEANAEDVVCCSMSYSWTGALVTPCAAEQKLPINALSNSL
LRHHNLVYSTTSRSACQRQKKVTFDRLQVLD SHYQDVLKEVKAASKVKA-2500

(F)
NLLSVEEACSLTPPHSAKSKFGYGAKDVRCHARKAVTHINSVWKDILLEDN
VTPIDTTIMAKNEVFCVQPEKGGRKPARLIVFPDLGVRVCEKMALYDVVT-2600
KLPLAVMGSSYGFQYSPGQRVEFLVQAWKSKKTPMGFSYDTRCFDSTVTE

(G)
SDIRTEEAITYCCDLDPQARVAIKSLTERLYVGGPLTNSRGENCGYRRRCR-2700
ASGVLTTCGNTLTCTYIKARAACRAAGLQDCTMLVCGDDL VVICESAGVQ
EDAASLRAFTEAMTRYSAAPPDPPQPEYDLELITSCSSNVSAHDGAGKR-2800
VYYLTRDPTTPLARAAWETARHTFVNSWLGNIIMFAPTLWARMILMTHFF
SVLIARDQLEQALDCEIYGACYSIEPLDLPPIIQRLHGLSAFSLHSYSPG-2900

G
EINRVAACLRKLGVPPLRAWRHRARSVRARLLARGGAAICGKYLFWAV

(P)
RTKLKLTPIAAAGQLDL SGWFTAGYSGGDIYHSVSHARPRWIWFCLLLLA-3000
AGVGIYLLPNRO-3011

Stop codon

() = Heterogeneity due possibly
to 5' or 3' terminal cloning
artefact.

FIG. 91

